THE LANCET

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

Telegrams—LANCET, WESTRAND LONDON *Telephones*—GERRARD 4314 & 4315 *Offices*—423, Strand, London, W.C.2

No. XIV. OF VOL. II., 1924. LONDON, SATURDAY, OCTOBER 4, 1924. Pp. 120—Price 1s.
No. 5275. Vol. CCVII. Founded 1823. Registered as a Newspaper. Published Weekly. Annual Subscription Inland £2 2s. Abroad £2 10s.

OXFORD MEDICAL PUBLICATIONS.

READY OCTOBER 9th.

ARTIFICIAL SUNLIGHT
AND ITS THERAPEUTIC USES.

By F. HOWARD HUMPHRIS, M.D., F.R.C.P., D.M.R. & E., Author of "ELECTROTHERAPEUTICS FOR PRACTITIONERS."

This is the first work written on Artificial Sunlight in England.
Demy 8vo. Illustrated. Price 8s. 6d. net.
Oxford University Press.
Humphrey Milford, Amen House, London, E.C.4.

IMPORTANT NEW BOOK.
LARGE DEMAND INDICATED.
37 Illustrations. 10s. 6d. net, Postage 6d.

RECENT ADVANCES IN MEDICINE
CLINICAL LABORATORY THERAPEUTIC
By G. E. BEAUMONT, M.D., Asst. Physician, Middlesex and Brompton Hospitals, and E. C. DODDS, M.B., Chemical Pathologist and Lecturer in Bio-Chemistry, Bland-Sutton Institute.
London: J. & A. Churchill, 7, Great Marlborough-street, W.1.

BY CHARLES J. HEATH, F.R.C.S.,
Consulting Aural Surgeon, Metropolitan Asylums Board; late Surgeon, Throat Hospital, Golden Square, London.
OTITIS MEDIA (MASTOID DISEASE):
ITS SYMPTOMS, DIAGNOSIS, PROGNOSIS AND TREATMENT BY MODERN METHODS, thus saving the hearing of the discharging ear with perforated drumhead.
Price 5s. net.
"We have no hesitation in describing Heath's paper as epoch-making."—ST. BARTHOLOMEW'S HOSPITAL JOURNAL.
"This work is recommended to specialists and even to those who are not."—L'OTO RHINO LARYNGOLOGIA INTERNATIONALE.
Baillière, Tindall & Cox, 8, Henrietta-street, London, W.C.2.

By FREDERICK W. PRICE, M.D., F.R.S.Edin.,
Senior Physician to the Royal Northern Hospital; Physician to the National Hospital for Diseases of the Heart, London.

DISEASES OF THE HEART.
THEIR DIAGNOSIS, PROGNOSIS, AND TREATMENT BY MODERN METHODS.
WITH A CHAPTER ON THE ELECTRO-CARDIOGRAPH.
Demy 8vo. 484 pp. With 245 Text-figures. 21s. net.
LANCET.—"By great care and by the use of an amazing amount of material, he has accomplished what many readers have been waiting for, giving us a complete account of the diagnosis, prognosis, and treatment of heart diseases by modern methods in association with all the invaluable teaching bequeathed to us by the older masters of clinical observation."
DUBLIN MED. JOUR.—"It is probably destined to take the place in the library of the present day physician that was occupied some 20 or more years ago by Sir William Broadbent's well-known work."
MIDLAND MEDICAL REVIEW.—"It is impossible to enumerate the many excellences of this book."
Oxford University Press,
Humphrey Milford, Amen House, London, E.C.4.

Third Edition. With many Illustrations. 12s. 6d. net.

TREATMENT OF DISEASES OF THE SKIN.
By KNOWSLEY SIBLEY, M.D.Camb.
London: Edward Arnold & Co., 41 and 43, Maddox-street, W. 1.

With 79 Illustrations on 40 Plates and 1 Text-figure. Demy 8vo. 12s. 6d. net; postage 6d.

INTERNAL DERANGEMENTS OF

THE KNEE-JOINT.
THEIR PATHOLOGY AND TREATMENT BY MODERN METHODS.
By A. G. TIMBRELL FISHER, M.C., F.R.C.S. Eng.,
late Hunterian Professor, Royal College of Surgeons of England; Surgeon (with charge of Out-Patients) Seamen's (Dreadnought) Hospital, Greenwich, &c. With Foreword by Sir ARTHUR KEITH, and Notes by Sir ROBERT JONES.
"An admirable monograph. ..... The surgical anatomy and physiology of the semilunar cartilages are fully discussed ..... this chapter is beyond praise. ..... The chapter on treatment is well up to date, judicious, and authoritative. The illustrations are worthy of the text."—PRACTITIONER.
"The best and most complete account ever written ..... of value to all practitioners."—CLINICAL JOURNAL.
London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C. 1.

READ THE "LANCET" REVIEW OF

KOLMER'S INFECTION,
IMMUNITY & BIOLOGIC THERAPY
NEW (3rd) EDITION

See Saunders' Advertisement on Page 7.

STERILITY IN WOMAN:
ITS CAUSES AND TREATMENT.
By ROBERT A. GIBBONS, M.D., F.R.C.S.E.,
Gynæcologist to the Grosvenor Hospital for Women.
"It is written clearly, and should make a special appeal to the general practitioner ..... We can heartily recommend this useful and well-written book."—THE LANCET.
"The volume provides an admirable account of the whole subject. It is sufficiently full for the needs of the family practitioner, and is written in a refreshingly clear and lucid style."
—BRITISH MEDICAL JOURNAL.
With 44 illustrations, 12s. 6d. J. & A. Churchill, 1923.

THE HANDBOOK ON BIRTH CONTROL FOR MARRIED PEOPLE.

WISE PARENTHOOD
BY
MARIE C. STOPES, D.Sc., Ph.D.,
Author of "Married Love"; "Radiant Motherhood" "Contraception," etc.
12TH EDITION, Revised and Enlarged, 3s. 6d. net. (Post. 3d.)

This book is specially suited for Doctors to recommend to enquiring patients. It is safe, practical, and scientific.

Descriptive circulars of this and Dr. Stopes's other books can be had on application.
Putnam, 24, Bedford-street, W.C. 2.

H. K. LEWIS & CO. LTD., MEDICAL PUBLISHERS AND BOOKSELLERS.

Text-Books and Works in Medical, Surgical, and General Science of all Publishers.

Large Stock of SECOND-HAND Books at greatly Reduced Prices at 140 Gower St. Telephone: Museum 4031.

MEDICAL AND SCIENTIFIC CIRCULATING LIBRARY

Annual Subscription, Town or Country, from One Guinea.

136 & 140 GOWER STREET and 24 & 28 GOWER PLACE, LONDON, W.C. 1.

Telegrams: "PUBLICAVIT, EUSROAD, LONDON." Telephone: MUSEUM 1072.

Farbwerke vorm. Meister Lucius & Brüning, Hoechst am Main, Germany.

The pantherapeutic Antiseptic
for deep and superficial application,

RIVANOL "Hoechst"

(2-Aethoxy-6·9-diaminoacridin-lactates),

possessing a powerful specific action on the pyogenic cocci
(STREPTOCOCCI, STAPHYLOCOCCI AND GONOCOCCI).

INDICATIONS:

Suppurating Peritonitis, Streptococcic and Gonococcic Suppuration of the Joints;

Abscesses, furuncles, carbuncles, mastitis, bursitis, and other localised suppurations; also for disinfection in recent injuries, infected wounds and ulcers.

INTRAVENOUS INJECTIONS IN GENERAL SEPSIS.

ORIGINAL PACKAGES:

Powder: Bottles of 1 oz. **Tablets:** Tubes containing 20 × 1½ grain tablets.
Novocain-Suprarenin Tablets "R" to prepare Rivanol solutions for deep antisepsis: Tubes of 20 tabls. (also in combined packages: 1 tube Rivanol tablets and 1 tube N.-S. tabls. "R").
Rivanol Dusting Powder: Boxes containing 1, 2 and 4 oz.

Rivanol-Gauze and Rivanol-Ribbon-Gauze:
Manufacturers and Distributors Verbandstoff-Fabriken Paul Hartmann, Akt.-Ges., Heidenheim a. Brenz (Germany).

Copy of "Modern Therapeutical Agents" containing complete list of "Hoechst" preparations sent free on application.

Samples and Literature will be sent to Medical Men at any time on request through:

Telephone: ROYAL 2335.

A. C. HENRY,
19, St. Dunstan's Hill, London, E.C. 3.

Telegrams: "Eumydrin, Phone, London."

Sutures in Ancient Surgery

Lanfranchi, of Milan

in the XIIth century, warned his contemporaries against including nerves in the mass ligatures commonly used. One of the victims of this accident was wont to chase the surgeon responsible for his plight when he saw him in the street, shouting and waving his paralyzed forearm.

Surely a far cry to the skill of the present-day surgeon, equipped with

D&G Sutures

Send for interesting new booklet of complete information.

C. F. THACKRAY
Distributer of D&G Sutures
Great George Street, Leeds – 119 High Holborn, London, W.C.1

COPYRIGHT OCT 1924 D&G

THE LANCET

No. 5275. LONDON, SATURDAY, OCTOBER 4, 1924. Vol. CCVII.

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

ADDRESSES TO MEDICAL STUDENTS.

Looking Back and Looking Forward. By Sir ISAMBARD OWEN, D.C.L., M.D., F.R.C.P. 685

Some Preventive Aspects of Medicine. By CHARLES PORTER, M.D., B.Sc. ... 686

Reasons for Entering the Medical Profession. By Sir HUMPHRY ROLLESTON, Bt., K.C.B., M.D. 688

The Medical Man of the Future. By H. J. WARING, M.S., F.R.C.S. 690

Fifty Years of Medicine. By Sir DAVID FERRIER, M.D., F.R.S. 693

ORIGINAL ARTICLES.

A Critique of the Surgical Treatment of Angina Pectoris. By Sir JAMES MACKENZIE, M.D., F.R.C.P., F.R.S. 695

The Dangers of Unabsorbable Sutures in Gastro-Enterostomy, with Report of a Case. By G. A. UPCOTT-GILL, F.R.C.S., and H. B. JONES, M.R.C.S. 697

Lesions of the Trachea in Pulmonary Tuberculosis. By FREDERICK R. G. HEAF, M.D. 698

Antipneumococcal Serum in the Treatment of Lobar Pneumonia. An Analysis of Twenty-seven Cases. By A. I. G. MCLAUGHLIN, M.B., Ch.M.—(*Illustrated*) 699

REVIEWS AND NOTICES OF BOOKS.

Modern Medical Monographs. Edited by Prof. Hugh MacLean, M.D., D.Sc. 1. Modern Diagnosis and Treatment of Syphilis, Chancroid, and Gonorrhœa. By Col. L. W. Harrison, D.S.O., M.B., M.R.C.P. 2. Modern Views on the Toxæmias of Pregnancy. By O. L. V. de Wesselow, M.B., F.R.C.P., and J. M. Wyatt, M.B., F.R.C.P. 3. Modern Methods in the Diagnosis and Treatment of Pulmonary Tuberculosis. By R. C. Wingfield, M.B., M.R.C.P. 701

The Theory and Practice of the Steinach Operation. By Dr. Peter Schmidt .. 702

Elektrotherapie. By Dr. Josef Kowarschik 702

Elements of Water Bacteriology. By Prof. S. C. Prescott and Prof. C-E. A. Winslow 703

Annals of Medical History. Vol. VI. 703

THE CONDUCT OF MEDICAL PRACTICE.

A Series of Articles by Experts dealing with the Difficulties Encountered in Professional Life and How to Meet Them.

XVIII.—Libel and Slander. By HUGH WOODS, M.D. 705

LEADING ARTICLES

THE PRINCIPLES OF SUCCESS IN MEDICINE .. 707

HEALTH LEGISLATION IN PROSPECT AND RETROSPECT 707

THE AFTER-HISTORY OF BREAST-CANCER OPERATIONS 708

ANNOTATIONS.

Voluntary Boarders in Mental Hospitals 709

Suboccipital Puncture in Meningitis 709

Phosphorescence of Fish and Meat 710

The Limitation of Harmful Drugs 710

The New Governor of Mauritius 711

The Royal Society's Exhibit at Wembley 711

Starch in Diabetic Foods .. 711

A New Method of Sphygmography 712

Welfare Work in Industry 712

MODERN TECHNIQUE IN TREATMENT.

A Series of Special Articles, contributed by Invitation, on the Treatment of Medical and Surgical Conditions.

XC.—Common Fractures of the Elbow-joint in Children. By ST. J. D. BUXTON, F.R.C.S.—(*Illustrated*) 713

SPECIAL ARTICLES.

The Blood Platelets and Their Place in Medicine. By S. C. DYKE, M.D., M.R.C.P. 714

The Health of the Army in 1921: Medical Examination of Recruits.—Dental Treatment 716

Conference on Industry and Medical Science: The Doctor and the Psychologist in Industry 718

British Wines and Cordials 703

The International Dental Exhibition 720

Ireland: Poor-law Medical Appointments.—Medical Reform 720

PUBLIC HEALTH SERVICES.

Reports of Medical Officers of Health: Oldham.—East Ham.—Huddersfield.—Warrington 721

School Medical Service: Leicestershire.—Northampton.—Northamptonshire.—Scarborough.—Stockport.—Torquay.—Warwickshire.—West Riding of Yorkshire 722

Infectious Disease in England and Wales 723

CORRESPONDENCE.

Working for Promotion ... 724

The Tissue Pathologist (Sir D'Arcy Power) 724

Dental Dressers (Mr. A. T. Pitts) 724

Chloride Metabolism in Radiation Treatment (Drs. E. C. Dodds, J. H. Douglas Webster) 725

The Diagnosis of a Healthy Heart (Dr. C. W. Curtis Bain) 725

Cancer and Some of its Significant Chemical Reactions (Mr. H. Gordon Reeves) 726

Metastatic Gas Gangrene (Mr. B. T. Rose) 726

King's College Hospital: School of Dental Surgery: (Dr. H. Willoughby Lyle) 727

Hop Dermatitis (Dr. C. J. Streich) 727

Epsom College Register (Mr. H. F. Lee) 727

Repression of Painful Memories (Dr. Hugh Wingfield) 727

Milk Problems (Mr. W. M. Scott) 728

The Transmission of Encephalitis Lethargica (Prof. James McIntosh) 728

The Results of Treatment in Sanatoria 736

OBITUARY.

Walter Hamilton Acland Jacobson, M.Ch. Oxf., F.R.C.S. Eng. 729

Henry Gervis, M.D., F.R.C.P. Lond. 729

Hartley Lupton 730

THE SERVICES.

Civil Consultants to the Royal Navy.—Royal Naval Medical Service.—Royal Air Force 709

MEDICAL NEWS.

University of London 730

Devonshire Hospital, Buxton 717

Metropolitan Hospital 723

London Medical Exhibition 730

Tavistock Clinic 731

Hospital for Sick Children, Great Ormond-street ... 731

National Institute for the Blind 731

Society of Medical Officers of Health 731

St. Mary's Hospital Medical School 731

Fellowship of Medicine and Post-Graduate Medical Association 731

City of London Hospital for Diseases of Heart and Lungs 731

Medical Society of London 731

Medical Defence Union ... 731

Brighton Water-supply .. 731

Memorial to the late Dr. J. Evan Jones 732

University of Melbourne: Chair of Dental Science .. 732

University of Liverpool: Clinical School 732

Liverpool Psychological Society 732

Wireless Concerts for Liverpool Patients 732

Donations and Bequests .. 732

Manchester Medical Society 732

Manchester Jewish Hospital Extension 732

Bradford Mental Defectives 732

Ladies' Medical Golfing Society 732

NOTES, COMMENTS, AND ABSTRACTS.

A Clean Milk Competition in Kent. By ALFRED GREENWOOD, M.D., B.Sc., D.P.H. 734

A Deserving Charity 735

"Alvus Adstricta" 736

An Improvised Drip-Feed Regulator for Continuous Saline Administration .. 736

Green Apples 736

Public Health in Gambia .. 736

Medical Diary 732

Appointments.—Vacancies 733

Births, Marriages, Deaths 733

THE ANATOMY AND TOPOGRAPHY OF THE ACCESSORY AIR SINUSES OF THE NOSE IN CHILDHOOD. By **Dr. A. ONODI.** An Atlas containing 102 specimens reproduced in natural size from photographs, with a Preface by Dr. W. WALDEYER. Translated by CARL PRAUSNITZ, M.D., M.R.C.S., L.R.C.P., late Assistant Bacteriologist to the M.A.B. 28s. net, post free 29s. 3d.

RAT POSTERS. Specimen copy, 1s. post free. Per 50 copies, 25s. Per 100 copies, 40s.

RELATIONS OF THE LACHRYMAL ORGANS TO THE NOSE AND NASAL ACCESSORY SINUSES. By **Dr. A. ONODI.** English Translation by DAN MCKENZIE, M.D., F.R.C.S., Surgeon Central London Throat and Ear Hospital. With 45 plates, 13s. 6d. net, post free 14s. 6d.

JOHN BALE, SONS & DANIELSSON, LTD., 83-91, Great Titchfield Street, London, W.1.

JUST PUBLISHED.

PSYCHOLOGY AND THE SCIENCES

EDITED BY

WILLIAM BROWN, M.D., D.Sc., M.R.C.P.

With Contributions by

J. S. HALDANE, M.D., LL.D., F.R.S. | *F. C. S. SCHILLER, M.A., D.Sc.* | *A. E. J. RAWLINSON, M.A., B.D.*
R. R. MARETT, M.A., D.Sc. | *L. P. JACKS, D.D., LL.D.* | *M. W. KEATINGE, M.A., D.Sc.*
W. BROWN, M.D., D.Sc., M.R.C.P. | *T. W. MITCHELL, M.D.*

Large Crown 8vo. Price **7/6** Net. Bound in Cloth.

(*By Post, 7s. 10d.*)

THE advance made in psychology is an outstanding feature in the intellectual life of the last half-century; but there is still much uncertainty about the precise value of the contributions made by this new science to other branches of thought. This is the topic discussed in the present volume. The eight lectures of which it is composed were delivered in the University of Oxford by the men best qualified to speak with authority.

A. & C. BLACK, LTD., 4 SOHO SQUARE, LONDON, W.1.

ORTHOPÆDIC APPARATUS

By F. G. ERNST.

65 Plates and 193 Half-tone Illustrations.

New Edition] *Price* 12/6 [Just Published

Divided into 8 Sections dealing with Upper Extremities—Wry Neck and Spinal—Pelvis—Hip Joint and Thigh—Paralysis—Knees—Fractures—Trusses—Feet, &c., giving a detailed description of all the most modern appliances for use in the above conditions.

"The enthusiasm and the mechanical skill which MR. ERNST *has brought to his work are apparent everywhere."*—GUY'S HOSPITAL GAZETTE.

Specialist in the manufacture and fitting of Orthopaedic Appliances, notably for Osteo Arthritis, Rheumatoid Arthritis, Ununited Fractures, Knee Joints, Poliomyelitis, Scoliosis, Kyphosis, Tubercular Spines, Trusses, Special Boots, and Light Metal Artificial Limbs.

F. G. ERNST, 80 & 82, Charlotte St., Fitzroy Square, W.1.

Telegrams: Spinalis, Wesdo, London.
Telephone: Museum 552 & 553.

BUY AN ERIKA FOR 5/- PER WEEK

TAYLOR'S FOR TYPEWRITERS

DESKS & TABLES **ADDING & CALCULATING MACHINES**

74, CHANCERY LANE, HOLBORN, LONDON.

THE ERIKA
The Best Portable Writer Complete in Travelling Case £14 14s.

HIRE BUY, EXCHANGE, REPAIR, AND **SELL**

VERY EASY HIRE PURCHASE.

All makes of Typewriters and Duplicators, Authors MSS. and Circular Letters typed by return of post.

Write Dept. 26. **Tel.: Holborn 4810.**
Temporary Typists Sent Out. *Estd. 1884*

DR. CHAUMIER'S

GLYCERINATED AND REINFORCED **CALF LYMPH**

THE CHEAPEST AND MOST ACTIVE LYMPH

PREPARED UNDER THE MOST MINUTE ANTISEPTIC PRECAUTIONS.

Supplied in Tubes, sufficient to vaccinate 1 or 2 persons, at 8d. each; 10 persons at 1s. 3d. each, 25 persons at 2s. 3d. each. Collapsible tubes for 40 vaccinations 3s. 9d. each. Postage and packing 2d. each extra.

ROBERTS & CO., 76, New Bond St., London, W.1.

SCHOOL FOR THE DEAF

Also for the Cure of Speech Defects in Hearing Children.

KINGSFIELD HOUSE, OXHEY, HERTS.

Principal: Miss BULLOCK
(Qualified Teacher of the Deaf)

Large house & garden. Outdoor life, games, &c.
Careful Character training. Christian influence.

STAMMERING

MOST SUCCESSFULLY TREATED.

RESIDENT AND DAILY PUPILS.

PROSPECTUS AND MEDICAL OPINIONS POST FREE FROM

Mr. A. O. SCHNELLE, [Tel.: Museum 3665.
Estd. 1905] **119, Bedford Court Mansions, London, W.C.1.**

STAMMERING, SPEECH DEFECTS.

BEHNKE METHOD. Estab. 1882. CASES, non-resident, treated at 39, Earl's Court Square, S.W.5, and, in residence, in the Summer holidays at Miss Behnke's house on the Chilterns.

"Pre-eminent success in the education and treatment of stammering and other speech defects."—*The Times.*
"Thoroughly physiological principles."—*The Lancet.*
"The method is scientifically correct and perfectly effective."—*Guy's Hospital Gazette.*

"STAMMERING, CLEFT PALATE, SPEECH, LISPING," 3s. 9d. of Miss BEHNKE, 39, Earl's Court Square, S.W.5.

STAMMERING

W. J. KETLEY, "Tarrangower," Brondesbury, N.W.6.
(Telephone: Willesden 435.)

30 years colleague of late B. BESLEY, Brampton Park, Huntingdon.

Those interested in the subject should write for his book, which will be sent post free.

By EDWIN L. ASH, M.D.

The Problem of Nervous Breakdown. 10/6
Nerves and the Nervous. 5/-
I Am and I Will. 5/- **Middle Age, &c. 5/-**

Mills & Boon, 49, Rupert Street, London, W.1.

TRUSS MAKERS.

MATTHEWS BROS., 10, New Oxford Street, London, W.C.1.

Established 1840. Telephone: Museum 1017.

PERSONAL ATTENTION GIVEN TO ALL CASES.

DIFFICULT CASES A SPECIALITY.

Addresses to Medical Students.*

I.

LOOKING BACK AND LOOKING FORWARD.

An Address delivered to the Students of St. George's Hospital at the Opening of the Winter Session, Oct. 1st, 1924,

By Sir ISAMBARD OWEN, D.C.L., M.D., F.R.C.P.,
CONSULTING PHYSICIAN TO THE HOSPITAL; LATE DEPUTY-CHANCELLOR, UNIVERSITY OF WALES; VICE-CHANCELLOR, UNIVERSITY OF BRISTOL.

CIRCUMSTANCES led me at one time to study a rather out-of-the-way chapter of human history: that of the origin and development of Universities in Europe. One of the impressions it left on my mind was that the reputation and success of an academic institution is largely proportional to the degree in which it succeeds in creating a sense of corporate existence among its members, and a corresponding corporate pride; such sentiments implying not only a feeling of fraternity among them, but a sense of their common interest in the credit and reputation of the community as a whole. Where such sentiments prevail—I leave it to psychologists to say why—the effective value of the individual seems to be perceptibly enhanced, to the benefit of himself, of the institution, and of the world at large. There is nothing new in all this. It has long been recognised as the basis on which our much-envied public school system rests.

I was one of those who regretted that so little attention was given to this subject when the reconstruction of the University of London was undertaken in the close of the last century. It was, in fact, the key-note of the counter-scheme that Sir James Kingston Fowler and I put forward at that time. But pray do not imagine that I am about to venture into any University of London questions; I have been wholly innocent of them for many a long day; I would merely express a hope that if any further reconstruction of the University is ever contemplated, the point I have mentioned will not again be overlooked.

[The speaker then made a feeling allusion to the death of Sir Sydney Russell-Wells.]

The atmosphere of London is certainly not one unfavourable to the growth of academic corporate feeling. Quite the contrary, I should say, when opportunity is offered it. I have been brought into contact in my time with many educational institutions in many places, and am free to say that I have never met with a more genuine corporate sense or a stronger corporate pride than among our own particular community of St. George's men. To an old-time St. George's man revisiting his hospital the place cannot but seem strangely familiar at first sight. It is only when he begins to look into details that he will realise what a wholesale change time has made in nearly every appliance which the hospital offers for the comfort and welfare of the sick, the instruction of the student, and the advance of medical science. And one may say much the same of the whole field of medicine and surgery cultivated within its walls. In superficial aspects and habits the physician or surgeon of to-day does not materially differ from his predecessor, but in every detail of his actual work the changes of the last half century have been revolutionary, and not the least of these have come about during the 20 years since I myself quitted medical practice.

MEDICINE A GENERATION AGO.

When I first entered on medical study the teaching of Lister was only just beginning to be followed in England, and at least 95 per cent. of modern surgery was yet unborn. Ovariotomy was a strictly tabooed subject, cerebral surgery undreamed of, and the story of the candidate who suggested removal of a damaged kidney as a possible expedient passed from hand to hand among us as a supreme professional joke. Preventive medicine, too, was in its earliest infancy, pathology still dealt with dead material alone, and no human eye had yet seen a pathological bacillus. The methods of medical education have undergone no less radical changes. It is strange now to reflect that I was a member of the first microscopical class ever held in the University of Cambridge, at any rate in connexion with medical studies. In those days the schools of the London hospitals, which were a gradual development from a system of personal apprenticeship, had only recently completed their organisation by absorbing or replacing the private schools of anatomy and of chemistry that had previously worked in connexion with them. In these later days St. George's has made itself the pioneer of a still further advance in the organisation of medical education, in deciding to relinquish the teaching of the preliminary sciences to the University of London, to which it properly belongs, and to confine itself to its legitimate fields of pathology, public health, and clinical medicine and surgery. The change was made, I fear, at some sacrifice of immediate interests; but it was a step in the right direction, taken in accordance with the accepted academic policy of the time, and sooner or later the example will tell elsewhere.

The term "clinical," in medicine as well as in surgery, conveys a somewhat different implication to-day from that which it did a generation ago. To a man who, like myself, has been little engaged in medicine the last 20 years, nothing is more striking than the degree to which laboratory methods and laboratory science have now come to supplement, or even to supplant, older methods of clinical investigation, whether for purposes of research or in the daily work of diagnosis. Many a clinical problem of a kind which in older days we used long and anxiously to puzzle over at the bedside is now settled promptly and decisively by a reference to the laboratory, and the laboratory has become as essential an appendage to a clinique as a dispensary.

Meanwhile it may be well to recall that the work of the laboratory is not the only aspect of the search after truth to which the inspiring name of "Science" applies; and to remember that clinical observations in the older sense of the term, provided that they are accurately made, and conclusions drawn from them, if logically drawn, are every whit as "scientific" as the work of the chemist and the physiologist, demanding to the full as great powers of mind successfully to deal with them. There may still remain a great part in the advancement of medical science for the older methods of investigation to play.

THERAPEUTIC SCIENCE.

This is certainly the case with one branch of medical research which has somewhat lagged behind the rest, and towards which in the nature of things the laboratory can contribute only incidental aid; I mean therapeutics. I am not seeking to question the value of the light that pharmacology has thrown on the mode of action of remedies, or ignoring the many recent discoveries of new and promising medicinal agents; but behind all this there still seems (if I may venture to say so) to be the old lack of a real science of therapeutics; of machinery for accurately determining the power, if any it have, of a reputed remedy to counteract a particular disease, or for a comparison of the value of one remedy with that of another. These might seem to the uninitiated simple determinations to make; in reality we know them to be quite the reverse. Our forefathers' therapeutic reasoning was simple enough. It rested on an unformulated but practically accepted assumption that the natural course of a malady was towards an unfavourable issue unless checked by artificial means. Granted

* With the consent of the authors all these introductory addresses are reproduced in somewhat abridged form.

this major premise, it logically resulted that any improvement observed in a case of illness could be confidently credited to the treatment employed at the time. A certain *vis medicatrix naturæ* was admitted in theory, but in practice ignored. This manner of regarding therapeutic questions, I need hardly say, still prevails largely among the public, and is, in fact, the basis on which the whole fabric of quackery is built. There were always some sceptics among us; one of the ablest physicians of my younger days, the late Sir William Gull, used to assert a diametrically opposite position. The natural tendency of the majority of maladies brought to a physician's notice, he urged, given due shelter, rest, and diet, was sooner or later (a rather variable later) towards recovery; and the participation of a remedy in bringing about the favourable results was at best a doubtful proposition. In an earlier generation a similar view appears to have been held, though hardly preached, by a still greater man from among ourselves—Thomas Young, the physicist.

Modern medicine, mindful of its grave responsibilities, does its best to steer a judicious middle course between undue scepticism on the one hand and undue credulity on the other; but the standing need, it feels, is to have such a course effectively surveyed and sounded, and definitely marked on the chart. The method of accomplishing this is in principle sufficiently simple, but on the other hand exceedingly difficult in application.

COÖRDINATED CLINICAL OBSERVATION.

It is when the practical application of the principles of therapeutic science begins that the difficulties surrounding it present themselves; for the therapeutic inquirer in all but a limited number of instances finds himself presently confronted with an indefinite series of variations in the very subject-matter of his inquiry; variations in the course, the duration, the severity, and the particular manifestations of cases, even of whole epidemics, of the same malady, to say nothing of variations in the constitution of patients and in their individual susceptibility, whether to disease or to remedy; variations so manifold as to require a widely extended field of observation to eliminate their effects, such a field as is seldom available in the practice of a single observer. A less obvious but no less real difficulty lies in the fact that clinical observation for the purpose of therapeutic inquiry is an art which in itself needs a certain special training if results of real scientific value are to be obtained. Considering all things, small wonder that so little has hitherto been accomplished in the direction I am speaking of, and that practical therapeutics in consequence is still so largely at the mercy of uncertain, conflicting, or even mutually contradictory individual views. Small wonder, too, that the establishment of a real science of therapeutics based on exact statistical methods has been so often in the past pronounced an impossibility. Is it really so?

I take heart of grace to propound the question afresh, because the three hardest-worked years of my life at St. George's were spent in an endeavour to prove the possibility of such a thing; with the result of convincing at least myself that there was no impossibility in the matter, granted three conditions—that is, a sufficiently wide field of inquiry, unity of aim and method among its cultivators, and (possibly hardest of all to obtain) adequate means to retain the services of a staff of fully trained observers, working under a single direction. With the growth of the scientific spirit another new spirit has entered the medical world—the spirit of coöperation in scientific research. In the growth of that spirit, perhaps, one may look for the future hope of therapeutic science, and anticipate that what was deemed Utopian in 1880 may, as many other things have done, become an admitted possibility of a more modern time.

II.

SOME PREVENTIVE ASPECTS OF MEDICINE.

Introductory Address on the Occasion of the Opening of the Session at the Middlesex Hospital on Oct. 1st,

BY CHARLES PORTER, M.D., B.Sc.,
MEDICAL OFFICER OF HEALTH, ST. MARYLEBONE.

THE Dean, to whom I owe the invitation to act as lecturer to-day, very kindly also chose the subject upon which I was to speak. "You will," he said, "deliver a lecture on Some Aspects of Preventive Medicine," but I propose to alter his title, making it read Some Preventive Aspects of Medicine. This I do with one object only, to save the men who are just beginning the study of medicine the trouble of finding out for themselves or the pain of learning from a non-medical source that medicine is not all curative in its aim but has a preventive aspect as well, and further, they must learn and better thus early that preventive medicine as it is now coming to be understood is not exclusively a matter for specialists but for every man and woman entering upon the practice of medicine. Largely I desired to speak thus early because of a feeling I have that once you get into the wards and begin to traffic with disease, to see it and study it and the multitudinous methods adopted with a view to alleviating it, you may come to regard it as inevitable, to believe that it is absolutely true that "man is born to trouble as the sparks fly upward" and to consider the saying "Prevention is better than cure," a saying only, so far at any rate as sickness is concerned.

It is so easy to come to these conclusions; the system of medical education now in vogue almost drives the student to them. He sees so much of disease, and the various conditions are so beautifully catalogued for him that it is not to be wondered at that he comes to regard diseases and disease groups as established things and to continue to so accept them throughout his professional life. Also he sees and hears and reads so much of treatment of disease and the success that attends it that it is not surprising if, in regarding sickness and suffering, he should think immediately and exclusively of means and methods of alleviation. That he should end up by disregarding the prevention better than cure statement or entirely disbelieving it is not surprising either. Curative medicine he can see; it works; he sees it at work and he sees the results obtained. Prevention and preventive medicine: are they anything more than conceptions? If not, where are they, where do they work, what do they do, what have they done? If they have done anything why is the out-patient department always thronged, why are the wards always full, and why does the secretary-superintendent eternally dream of millionaires and hospital extensions? These are reasonable and pertinent questions—questions I should like to think the medical student occasionally asks, since to me it would be evidence that he recognised the existence of a preventive aspect to medicine and gave some thought to the question of prevention.

THE ACHIEVEMENTS OF PREVENTION.

If he has doubts, and I admit he has reason for them, I should like to explain that so young is preventive medicine that practically there has been nothing more done than a mere clearing of the ground; but in connexion with even these preliminary efforts it is possible to show results. These are in the form of reductions in the number of persons dying annually, reductions in the number of cases of some diseases, and the almost complete disappearance of others, and associated with these happenings such benefits for the people as lessened suffering, worry, and anxiety, a prolongation of life with better health, and more comfort to enjoy it with.

The story of these gains is unfortunately told in figures, and most people hate figures so much that I hesitate to mention them, but perhaps I may be

forgiven for giving only a few. Let the first of these relate to the period round about 1875, when it may be taken interest in preventive medicine began to awake, since it was in this year the legislature demanded that works in relation to public health should be organised and a special preventive medical service created. On an average between 1875 or a little earlier and 1880 the annual number of deaths was 517,831, the average number of people alive being 24,255,271. This gave a death-rate of 21·4 per 1000. In 1923, the organisation having fairly well established itself and views as to the qualifications of the preventive medicine specialists having become crystallised as evidenced by the introduction of new regulations as to training and examination, the number of deaths had fallen by something like 100,000, and the death-rate to 11·6, just over half of the previous average rate. These things had happened, it may be noted, despite the fact that the population had increased by no less than 14,000,000 to 38,403,000. Why was there all this reduction?

Something must have happened to disease; something that may for convenience be called "prevention" must have been exerting influence on it. Amongst the infectious diseases particularly the contribution has been extraordinary. Take scarlet fever, which in the period between 1871–80 added on an average each year over 17,000, killing 7 out of every 10,000, and in 1923 less than 1000, or about 1 per 50,000. Take small-pox, which contributed 7 to the total number of deaths in 1923, as compared with an average of nearly 6000 in each of the ten years 1871–80. Typhus fever which added regularly round about 1500, scored 1 in 1923, and enteric fever, which, as I have already indicated, is getting into the group of disappearing diseases, as against an average of nearly 8000 put on only 450. Even diseases that we regard as prevalent have yielded to the efforts that have been made, lung tuberculosis—consumption—contributing yearly not over 50,000 but a rough 30,000.

In the case of other forms of consumption there is an equal, if not a greater, improvement, though, since the fall is only from 18,000 to 8000, we have not yet reached the state I have been assured exists in Boston, U.S.A., where cases of surgical tuberculosis affecting bones, joints, &c., are practically never seen in hospital practice. Though we have not yet reached that happy condition we are surely approaching it. With 10,000 fewer deaths there must be a marked reduction in the number of cases, a reduction that will become even greater as the improvement in the milk-supply, for which all interested in preventive medicine are working and hoping, is brought about. If there has been reduction in the number of cases of, as well as of deaths from, tuberculosis, and you may take it there has been and is a progressive reduction, so also there must be fewer cases of the other diseases in which there has been a falling off in the number of deaths, and if there are fewer cases there must be these other things I have claimed should be credited to preventive medicine—lessened suffering, lessened anxiety, and increased healthiness.

In the case of certain other diseases the conquest is less complete, and it is not possible to claim more perhaps than that they have been fought to the point of yielding or even only to a standstill. At the moment one of the most important in this group is diphtheria, the number of deaths from which in 1923 was 2722, only very little lower than the average for 1871–80—viz., 2943. Even in regard to this, however, some claims may be made—viz., that it is less dreadful than formerly, and is even threatened with extinction, since it is now possible by means of tests to discover whether or not an individual is liable to attack, and if he proves to be so to afford him protection by something in the nature of vaccination.

The results that have been obtained in the United States particularly, but also here and in certain continental countries, by this procedure appear to justify the belief that in it there exists a means of increasing the amount of control over this disease. In America—a land where the readiness to investigate is very marked and money to encourage it easily obtainable—investigations are now proceeding on similar lines in the case of scarlet fever. As this disease is one quite difficult to control any addition to the means of dealing with it will be very welcome.

The last fact in relation to the reduction in the number of deaths that has occurred in the years since 1875 I propose to mention is this: that it has been most marked in the earliest period of life. It is the babies who have benefited most, who have been given year by year not only an improved chance of life but a higher chance of health. Between 1871 and 1880 so small was the chance that on an average out of every 1000 born 150 died within 12 months. In 1923 the extent to which the chances had improved is shown by the fact that the rate of mortality had dropped to 69 per 1000 births. To me this falling rate of mortality amongst infants always seems the most wonderful thing; much more wonderful than the effect produced on the diseases I have mentioned, more wonderful even than the increased expectation of life—about 20 years—given to this generation. More wonderful because it has been obtained as a result of the operation of purely preventive measures; more wonderful and more encouraging because it shows what preventive measures can do.

THE DOCTOR AS TEACHER.

Largely the baby lives have been saved by dispelling ignorance; by teaching the methods to be adopted in relation to the care of life and health; by encouraging the practice of these methods, seeing they are practised and demonstrating the effects of their practice.

It is not only in regard to the care of infant life and health that there is need for dispelling ignorance. It is not only in infancy that benefit is to be derived from the appreciation of right methods. Doctoring, you must learn, does not mean merely the treating and curing of ills, and the service is not to the sick alone. The title "doctor" you hope to gain gives you the right and ability to teach. It imposes on you the duty of teaching, and you *will* teach. Indeed, you *must* teach. More and more definitely there is evidence of a demand from the people that they shall be taught. They desire to know how to safeguard their life and health. They, if not you, have studied the figures, some of which I have quoted, and have noted the decreases and the disappearance of disease and have heard the claims and promises of the preventive medicine experts and the health authorities. They accept that much suffering is avoidable and they are insisting that they shall be told how to avoid it and how to live as the Bible says they should, to three score years and ten. They believe that the medical profession knows and that the secret is imparted to medical students in medical schools.

THE PREVENTIVE ASPECT OF PANEL PRACTICE.

The law of the land, in fact, promises them prevention and provides for its application. That, at any rate, is what the National Health Insurance Acts seem to me to do, and every medical practitioner who becomes a panel doctor and accepts service under the Acts undertakes to carry out preventive as well as other duties. He is, as the chief medical officer of the Ministry of Health has said, a "missionary of health." It is extraordinary how the views with regard to the Insurance Act have changed, and how many doctors as well as patients who formerly could see no good in it are coming to regard it as a measure of definite value.

To many practitioners, it may be, its value as a preventive measure may not be apparent as yet, but they will come to recognise it. There are too many people referring to it as such; too many people quoting statistics showing how many thousands of years of work are lost per annum and how many might be saved if the medical services provided for by the Act were properly made use of. Also, as I have already said, there are the people who are demanding that the necessity for suffering shall be removed and that the

Act shall be operated to this end. They will no doubt see that it is operated and that efforts are made in the direction of real prevention. These efforts, however, will not properly be made and real success will not be attained until they recognise further that they themselves have some responsibility in regard to prevention. It is not a matter for the doctor, the teacher alone, as they suppose. The least of the difficulties, I have said, was the finding of the teacher. The greatest difficulty is those who have to be taught. There must be the will to learn, to coöperate; the desire to accept the teaching and apply it. There must be submission to supervision, perhaps not so close as is the case in infancy, but still sufficiently close. If the two groups, the doctor and the people, will realise their responsibilities and will coöperate for prevention, prevention will follow and results perhaps not so wonderful as those that have been obtained in the case of childhood but still wonderful will be obtained.

THE STUDY OF HEALTH.

At the moment and in my capacity as a member of the staff of the Middlesex School—a position I am immensely proud to occupy—it is with the budding doctor I am chiefly concerned.

That concern is to beg of him not to devote all his time, energy, and enthusiasm to the observation of the diseased and the study of disease. There is much to learn of the healthy and of healthiness, and it is going to be worth while learning it. An American professor of preventive medicine has recently caused a certain amount of amusement by suggesting that, well or ill, everybody should undergo a complete medical examination at regular intervals. By the age of 60, in his opinion, everybody should have been thus completely overhauled at least 75 times. The reason for the amusement is not clear to me. It is largely because I feel so certain that the benefit of regular and frequent medical inspection will soon be widely recognised, and that the medical profession will come to favour and recommend it, that I advise the turning of attention to the study of the healthy, of health and the maintenance, the treatment of health.

That the profession should recommend such examinations is not in the least unreasonable. Since the time when it became fashionable to regard the teeth as the source of the bulk of our ills we have been preaching that everybody should visit the dentist once or twice a year. The teeth are not, however, the only organs in the body that may, though there is very little evidence of the fact, be the seat of some trouble that can be readily stopped if recognised early and promptly dealt with. Some day, perhaps, the profession will think it worth while pointing this out and make the obvious recommendation; or perhaps, happy thought, the dentist may return the doctor's compliment and point out the necessity for a wider overhaul than he can give.

MEDICAL INSPECTION.

A further reason that might be offered for failure to see humour in our professor's suggestion is that amongst quite a large section of the population of this country the practice of medical inspection has already been established. Of the hundreds of thousands of children attending the elementary schools quite a respectable number before they leave school must have had a considerable proportion of the 75 medical inspections due to them, having undergone examination at the child welfare centres in babyhood in addition to the three or four to which they must submit during the period of school attendance. The unfortunate thing is that these inspections cease on leaving school and that the only class of the population to receive the advantage is that privileged to attend the elementary schools. That benefits spring from these inspections there is abundance of evidence, but they should not be limited to any age or class.

Having been begun, however, the practice is certain to spread, and the medical profession must be prepared to encourage the spread and to carry out the work that will be involved.

III.

REASONS FOR ENTERING THE MEDICAL PROFESSION.

Delivered on Oct. 1st to the Students of Charing Cross Hospital on the Occasion of the Prize Distribution at the Opening of the Winter Session,

BY SIR HUMPHRY ROLLESTON, BT., K.C.B., M.D.,
PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AFTER the privilege of congratulating the prize-winners it is natural to turn to those who have not on this occasion gained the palm, though they have honestly struggled in the dust of the arena, and to remind them that there are after all possible advantages in their lot; just as hereditary wealth or a distinguished parentage is often a handicap by involving the absence of the keen spur of poverty or by providing a false sense of a private and easy road to eminence, so may early success induce slackness. So widespread is sympathy, born of similar experience, for the unsuccessful that there has perhaps been a tendency to minimise the influence of prize-winning by pointing to Senior Wranglers who have not been heard of again, and by drawing attention to the early failures of men afterwards famous. Although precocity may be short-lived and overwork may induce sterility, it seems to remain true, as Sir Squire Sprigge concludes in "Physic and Fiction," that the prize medical students on an average continue to do well. On the other hand, everyone does not develop at the same rate, and the student who matures slowly may eventually be mentally stronger than the more brilliant contemporary of his hospital days. What we are pleased to call chance, because the responsible factors are hidden from our eyes, plays an enormous part in our future, and all we can do is to work so as to deserve success. There is, indeed, an advantage in competing for prizes quite apart from the place obtained in the list; it is a preliminary canter and part of the training for the compulsory examinations that await the student at another place. It provides practice in clear expression and marshalling of knowledge in the written paper, and accustoms the candidate to the trial of a viva voce examination when a question on an all unexpected subject suddenly impinges on an anxiously strained brain and demands an accurate answer. There is thus a serious reason for congratulating those who "also ran" on having carried out this part of their training, not only for the caudine forks of an examination, but for the emergencies that will from time to time crop up in professional life long after the fitful fever of examinations has been well-nigh forgotten.

Let me on behalf of the staff of the Medical School and Hospital extend a hearty welcome to those who are now joining this medical school; it would be impossible to give them better advice than to follow the example and traditions of the great men, such as T. Wharton-Jones, T. H. Huxley, T. H. Green, and F. W. Mott, who have adorned this famous institution.

THE CALL OF MEDICINE.

Although you have all committed yourselves to the profession of medicine it is not a mere act of curiosity to mention the reasons that may lead up to such a decision. The reasons attracting men and women to our profession may decide in advance what form of practice or activity they will ultimately adopt, and to these brief reference will be made, but usually the wise advice not to specialise early has been unconsciously followed.

The Bread-and-Butter Aspect.

While one, and certainly the commonest, object of entering a profession is, of course, to gain the wherewithal to live, this can be much more easily and successfully attained by going in for business or trade, strictly so called, than for medicine, which has been

described as a noble profession but a decidedly bad trade. Still undoubtedly many choose medicine with this aim in view, for, at any rate in the past, more members of the healing art gained a living of a sort than is the case among the followers of the Church or the law; it is true that the prizes are few, and the income is often small, sometimes, indeed, barely a living wage, or, as it has been called, a "starveling"; before the war it was, I believe, estimated that the average income of the members of the profession as a whole was about £300 a year, though this must have been hard to arrive at and then approximate only. Now with the rise in the cost of living it must be much higher, possibly £500 to £600 a year. But just at the present moment there is considerable reason to believe that the medical profession is overstocked by those recently qualified; last year the number of new practitioners registered was 2482, the highest on record; and the number of medical men is increasing more rapidly than the population, so that the rate is approaching one medical man to 1000 of the population. As the result of the rush into the profession after the war, the Universities and examining boards are now at the crest of the wave as regards candidates for the final examination—for example, at the Final Conjoint Board examination in July last there were more than 500 candidates up; it is true that they did not all get through, but that the recently qualified are finding it hard to obtain resident posts there is, I fear, no doubt. This temporary condition must of necessity right itself in accordance with the laws of demand and supply, and indeed this corrective process may have begun already. Last year the entry into the medical profession dropped from 2000 in the two previous years, and 3500 in 1919, to 545, which is little more than a third of that (1500) in the first year of the century. There is also a very considerable fall in the entry of women into the profession; whatever the cause, there is no question that 1923 saw a very distinct drop, which contrasts with the war and post-war rise in the number of female medical students. The evidence of overcrowding among the qualified women and realisation of the difficulty of obtaining posts when a degree or diploma has been obtained may have warned parents not to encourage their offspring, especially their daughters, to choose our profession.

Heredity and Environment.

A not uncommon reason for entering our profession is the accident, so to speak, of environment or heredity. When the father is a medical man the home atmosphere often prepares the son to follow in the paternal footsteps as a normal course of evolution, especially as there may be a practice waiting for him; so without any special ambition or inclination for another walk of life he regards it as a natural family succession. I know of a family with seven generations in succession. This is perhaps a survival or an unconscious imitation of ancient custom, for in very remote times the art of healing was hereditary from generation to generation in the sacerdotal caste. In Ireland until a comparatively recent period the profession of physic passed from father to son, just as did the practice of other arts and crafts, and was a relic of the time when a medical practitioner was attached to the clan or house of a chieftain (Kirkpatrick). On the other hand, a boy or girl may early decide on the physic line and keep to this resolution; the impulse may date from some accidental experience, such as injury or illness, and the resulting contact with the striking personality of a medical attendant; Sir William Bowman is said to have been led to take this step by his interest in the treatment of a wound in his hand sustained when experimenting with gunpowder. Sydenham was attracted to the profession he so greatly adorned by the influence of Dr. Thomas Coxe who was attending his brother, Colonel William Sydenham, in 1646. An allied but apparently curiously infrequent reason is the desire to be in a position to look after one's own disabilities. Elisha Kent Kane (1820–57), surgeon in the United States Navy, who went on the two American expeditions (1850–51, 1853–55) financed by Henry Grinnell in search of Sir John Franklin, originally intended to be a civil engineer, but after an attack of rheumatic endocarditis he was advised by his friends to take up medicine on the ground that he would be happier if he understood and so could manage his own case. Interest may suddenly be awakened by the accident of reading a medical book or article, as in the case of Dr. Tertius Lydgate in George Eliot's "Middlemarch" (p. 104), a portrait known to have been drawn, in part at least, from life. Among those who, like William Hunter, the elder brother of the more famous John, have started life with the intention of entering the Church, but have abandoned that calling for the cure of our vile bodies, was Sir William Osler, who is believed to have been partly influenced in taking this step by reading Sir Thomas Browne's "Religio Medici."

Educative Value of Medical Study.

A few men, paradoxical as it may at first sight appear, take a medical degree without any intention of ever practising; this is not, as sometimes happens in the case of the Bar, from a belief that it is a kind of social distinction to belong to a learned profession, but because they have already decided on devoting their lives to investigation or teaching in one of the sciences, such as physiology, biology, biochemistry, morphology, or pathology, which are so closely bound up with medicine. Such men rightly recognise that their outlook is greatly broadened by passing through the whole of the medical curriculum, that as research workers they are better placed to understand the bearing of the problems to be solved, and that as teachers of medical students they are thus in a much more advantageous position to deal sympathetically and for the best with future practitioners. In short, the experience gained by passing through the medical curriculum tends to alter the outlook of the teacher of the preliminary biological sciences. Let us contrast the extremes of the groups of teachers—those who know their science only with those who in addition have been through the curriculum—and think for a moment of the difference in the attitude that may be adopted by the two categories of teachers; no doubt much could be said for both; a teacher of the first group might say in his enthusiasm that his function is to teach and examine on the science, whereas one of the other class would consider that his business is to ground future medical men in what he conceives to be necessary to ensure their efficiency.

Stimulants and Anodynes.

In the days that were earlier, men sometimes entered the medical profession because of their ambition to be in one of the fighting forces; for when prevented by mental or bodily defect from gaining admission to the executive branch they fell back on the Royal Naval Medical Service, the Royal Army Medical Corps, or the Colonial Service. Love of travel and of adventure, which can be gratified in the Services, is another possible incentive, and there is in addition the material attraction of a pension to fall back on. But the shortage of entries into the Services at the present time shows that these factors are no longer operative. Similarly, the number of medical men who now enter the mission field is so small that a desire to be a medical missionary accounts for very few entries into our profession. But how many take up medical work from feelings of real devotion to their fellows, and quietly carry through this ideal in the ordinary rough and tumble of life, it is impossible to guess.

A somewhat unusual reason, for at any rate there are few such confessions, for adopting the medical, though it is far from unknown in the nursing, profession is disappointment in love. James Macartney,[1] the distinguished professor of anatomy and chirurgery at Trinity College, Dublin (1813–37), when refused by Miss Mary Ekenhead, "determined to adopt the

[1] Kirkpatrick, T. Percy C.: History of the Medical School in Trinity College, Dublin, p. 217. 1912.

profession of surgeon in order to harden his heart"; but the course of his love affairs soon turned into smooth waters, and after marrying Miss Mary he became a demonstrator of anatomy to Abernethy.

PATHS IN THE MEDICAL FIELD.

The factors responsible for taking up medicine may determine the line of practice, general, consultant, specialist, or in the several services of the State, that is eventually adopted. Heredity in the form of a family practice is an obvious example of a reason for becoming a general practitioner; early marriage and the need of money, or love of country life may have the same effect. A bent for research and seeking out "the secrets of nature by way of experiment" of course provides whole-time pathologists, physiologists, and biochemists. Ambition backed by a certain degree of ability and patience of no small degree is responsible for most of those who attempt consulting practice; but even when the decision has been made so far the choice of medicine, surgery, or obstetrics and gynæcology may be determined by opportunity or accident—i.e., the contemporary prospects in these departments of practice at the medical school to which the individual is attached. Thus at one hospital two men who started as general physicians and another who was well known as a pathologist eventually became gynæcologists, and careful calculation as to probable vacancies has been known to settle the choice between medicine and surgery. Interest and technical skill are the natural reasons for adopting one of the special branches, such as ophthalmology, laryngology, otology, orthopædics, urology, anæsthetics, or dermatology, and there is the mundane advantage that the wait during what has been called the mere bread stage, before butter, much less jam, can be afforded from the rewards, is not so prolonged as in the case of the general consulting physician.

IV.

THE MEDICAL MAN OF THE FUTURE.

Delivered to the Students of Westminster Hospital on the Opening of the Winter Session, Oct. 2nd,

BY H. J. WARING, M.S., F.R.C.S.,

DEAN OF THE FACULTY OF MEDICINE, UNIVERSITY OF LONDON; VICE-PRESIDENT, ROYAL COLLEGE OF SURGEONS OF ENGLAND, ETC.

IT is perhaps not altogether unprofitable at times to turn from the record of what has been or a description of what is, to a guess or a surmise of what may be. It has certain advantages, too, over the processes of recording the past; it does not call for the same stern and rigid adherence to fact; it leaves more scope for the imagination: it is a game in which all can join; and you cannot be proved to be wrong—at any rate during your life-time—and the corroboration or otherwise of your prophecies subsequently is a matter which does not very greatly concern you now. I propose, with your concurrence, to give my imagination its head and to make you a present, which I hope may not be wholly unacceptable, of some speculations regarding the medical man of the future. They are speculations for which I do not claim any special powers or authority; they are merely the extension and modification in the imagination of some of the processes and tendencies which I have observed actually at work to-day in the realm of medicine.

THE YOUTH OF MEDICAL SCIENCE.

Now medicine as a *science* is still very young, although as an art—a profession—it is one of the oldest. If we contrast mathematics and medicine we realise the difference. Greek thought in the world of mathematics is one of the wonders as well as one of the glories of the human mind; imagination, rigorous proof, logical demonstration—all these qualities are present in their excellence. But Greek thought in the world of medicine was of another order. It is true that we find some of the qualities which we still look for in the good physician: we find, for instance, keen and reflective observation; we find a high standard of professional rectitude, and so on. But we cannot say much more than that careful empiricism was the main guide; it was certainly the safer guide. Of anatomy practically little was known and no wonder, when dissection was profanation; of physiology little more, and that erroneous; and such surgery as was practised seems, as far as we can see, to have inflicted the maximum amount of suffering on the unfortunate patient. We are told, at any rate, that the vigour of his protest was proof of the efficiency of the treatment. There is in fact in direct contrast to mathematical thought little of the heritage of Greek thought of value to medicine, and the great name of Aristotle, the prince of observers, was positively a hindrance when in the sixteenth and seventeenth centuries the science of medicine was born, and medicine made a fresh start, based on the anatomy of the great continental teachers, and not less to the labours of our own William Harvey. This is not the only English name. John Hunter, Cheselden, Jenner, and, of course, Lister—names like these stand out and there are hosts of others—less famous perhaps—but men who were sound clinicians and observers, good medical men and possessed of an abundance of those qualities which were necessary to maintain the contact which in medicine is at all times needed between science and human life, that empirical skill, that sanity and common-sense and humanity which, when the *Science* of Medicine was in its very infancy, encouraged it and fostered it and gradually made it what it is to-day.

SCIENCE AND PRACTICE.

The *Science* of Medicine, though growing vigorously, is still very young, and the probable manner and direction of its growth in the next few years are matters which seem to me to have a great interest for those of us engaged in different ways in the practice of medicine, and especially to those of us who are occupied with questions of medical education. I consider the present time to be a critical one in the development of science and practice. Think, for example, of the great strides made in recent years in chemistry and physics in their application to living organisms and of the resulting sciences, biochemistry and biophysics, which have wrought changes which one may almost call a revolution. I think that the next few years will see further great and important changes. I may not see them myself, but some of you here to-day may do so; and whether I am right or whether I am wrong in my judgment of the particular manner and direction in which those changes will manifest themselves, I think there is no harm and there is probably some good in letting our minds play about with ideas as to possible future developments, and to maintain towards them a certain suppleness and alertness of mind. Criticism—yes—and dissent if you like, but not apathy or indifference—you—all of us—are not old enough for that. I hope we never shall be!

SPECIALISATION AND ITS DANGERS.

You cannot have failed to notice two great processes at work in medical investigation and treatment to-day. They are distinct, though in some respects they are related, and they have both been operative for some years, although the last few years have seen a pronounced extension of their activities. The first is the process of specialisation. The historic division of function between physician and surgeon has given place to countless subdivisions among both branches of the profession. The portions of the human frame and its various organs have been allotted to, or appropriated by, the specialist, whose business it is to be especially conversant with some small territory, and who often boasts of his ignorance of what is outside his boundaries. The eye, the nose, the ear, the throat, each has its special guardian;

it is true that sometimes two or three of these may be found associated, but this is, I feel sure, only a transient phase—only recently the University of London, with the assistance of a generous benefactor, has founded a lectureship in otology. And these are only illustrations. The heart, the chest, tuberculosis, venereal disease, diseases of women and children, the wrongly-named orthopædic surgery—I need not go on to particularise. Doubtless you have heard of specialists in the vermiform appendix. Then, in addition there are what I may call specialists in investigation, pathologists, bacteriologists, biochemists and biophysicists, including, of course, investigators into such subjects as X ray and electrical treatment. This extension of specialisation is, I think, to a great extent inevitable, and up to a point it is, I think, a welcome and desirable process. It is only by means of specialisation that it is possible to make those additions to our knowledge which we call progress, and it is the specialist who can extend the frontiers of our knowledge. But the process has its dangers. One of them is this. The specialist tends to work in isolation and is concentrating all his activities on the one particular branch which he has made his own. Unless he can work in direct relation with other members of his profession this concentration may degenerate into an obsession and he will view every problem from his own particular angle. Further, specialisation is bringing about some unexpected repercussions in medical education, and those who like myself are particularly concerned with medical education at the University, the General Medical Council, and elsewhere, are being constantly met with new demands and new problems. The specialists, who naturally hold that there is nothing like leather, are claimants for the inclusion or recognition of their subject in the curriculum of the medical student. But the student, and this you know full well, replies that life is short, and that even with the lengthened curriculum, the inclusion of all the specialties is a physical impossibility. He is right too; and under the present system there is not time for more than the inculcation of the fundamentals of medical education—a thorough grounding in the preliminary sciences, the intelligent utilisation of the organs of sense, and the acquisition of sound *principles* of medicine and surgery.

NEW METHODS.

The second outstanding feature in modern medicine is the recognition of fresh curative and ameliorative agencies and their continually extended employment. The sweet simplicity of faith which held that the contents of a bottle poured down the throat was the best and in some cases the only method of effecting a cure is now a thing of the past—except perhaps in the ingenious advertisements of patent-medicine vendors. Recently it has taken another form, and we have such irregular practitioners as the napropath who claims to cure all the ills of man by a varied stimulation of the nape of the neck—correctly applied; but these are passing vanities. The human organism, it is agreed, is far too complicated a mechanism to be corrected and adjusted by such simple methods. It is indeed only in comparatively recent years that we have learned how complicated it really is. The physiologists announce every year some further mapping of hitherto unknown territory; the pharmacologist has some new biological reaction to report. But these are by no means the only explorers. Other sciences are taking possession. The study of biochemistry and biophysics is leading to fresh knowledge and fresh treatment, and electricity and radium and light and heat are all being pressed into the beneficial service of diagnosis and of healing. Gradually the forces of all the sciences are being focused on the great task of curing or relieving suffering humanity.

The full significance of this development at which I have only glanced has yet to be appreciated. It is destined, I believe, to revolutionise the practice of medicine and surgery. It has this much in common with the growth of specialisation, that it makes increasing demands upon the time and work of medical students, but it is a different kind of demand. It is not merely a question of a particular method of treatment or of profound acquaintance with some branch of disease; it is more than that. It is a question of new methods of approaching the whole phenomena of human life, of evaluating the human body in terms of physics and chemistry, or if that is putting the claim too highly, it is at least making it necessary to emphasise more strongly than ever the importance of the so-called preliminary or fundamental sciences in medical education. There is, I know, a universal feeling among medical students that the time spent on the study of chemistry, physics, physiology, and pharmacology, and so on, is largely a waste; that these things are regrettable incidents in a student's career, and until he has done with them and has "got into the wards" his medical education has not really begun. I understand this impatience and the desire to get, as it were, to closer grips with the actual practice of medicine, but while I understand, even while I sympathise, I cannot say that this is right. I am afraid it will be little consolation to some of you when I say that in my opinion the medical student of the future will have to spend more and not less time on the fundamental sciences; that in fact to a much greater extent than to-day the value of his work in the wards will be in direct proportion to the preliminary scientific work prior to admission to the wards.

THE FUTURE OF MEDICINE.

Now I want to turn to this question: What is going to be the cumulative effect of these two great developments, the increase of specialisation on the one hand, and the constantly increasing employment of new diagnostic or curative agencies on the other? The answer to this question is really the prognosis of the future of medicine. You will already have observed this fact, which I think is not controvertible—namely, that a patient in a large general hospital, the poor patient as well as the paying patient, has open to him larger, better facilities and resources than any patient outside—no matter how rich or well-to-do he may be. All the tremendous resources of a modern hospital, its laboratories, its elaborate instruments, its trained staff of physician, surgeon, specialist, its pathologist, radiographers, and so on, can be and are employed first in tracking down and discovering the disease and then in its eradication and cure. The recognition of this fact is not confined to medical men. The lay public have in recent years become increasingly aware of it, and instead of the reluctance to enter a hospital—a survival it may be of the pre-Listerian day—the upper- and middle-class public who would formerly have been treated at their homes show a willingness, almost an eagerness, to enter a hospital, and the provision of adequate accommodation for paying patients is now one of the problems which confront the governing bodies of hospitals in London and the provinces. This tendency, as I have said, is growing, and its continued growth is, I think, inevitable, as inevitable as the division of labour in industrial processes, and for similar though far more potent reasons. The investigation and treatment of disease require modern buildings and plant specially adapted for the purpose, and a highly-trained personnel such as one would find in any modern successful factory. No one would now expect any one man to be so conversant with every part of a motor-car as to be able to repair it; we know by sad experience that if any serious trouble develops the part involved has to be returned to the maker for expert and specialised treatment. What, then, are we to expect of the human body, which is infinitely more complicated, delicate, and subtle than any motor-car? Is it reasonable to expect any medical practitioner, however learned and experienced, to be able to give in a complicated case anything more than a general, a tentative diagnosis, to act so to speak as a "sorter" and to refer a patient to the appropriate expert. And

even if the seat of the trouble is correctly located—and let us concede that the powers of an accomplished physician do not stand in need of the help of the elaborate laboratory apparatus which a hospital provides—how in many cases is the appropriate treatment to be given without the help and coöperation of others? We know, of course, that in various ways that necessary coöperation and assistance is obtained, but it is done very often circuitously and indirectly. To my mind, however, this is not enough, and I envisage an organisation of the medical profession in which coöperation, joint and united effort will be the systematised normal practice, and when a patient needing advice from a medical man will have brought to bear on his case all the resources for diagnosis and treatment which are at the disposal of a great hospital.

Training of the Medical Student of the Future.

I do not anticipate that this will be substantially longer in *duration* than it is at present. I certainly do not think it should be, for the sooner the energy and optimism of youth are given their outlet in the world the better for their possessor and better, I think, for the world. But while the length of the course at a medical school will be substantially the same as at present, its *character* will differ in some important respects. In the first place, with the raising of the standard of science teaching in our public and secondary schools I should expect that the medical student of the future will enter upon his course with a grounding in physics, chemistry, and biology which is at least up to the standard now exacted for the First M.B. Examination. He will thus gain additional time to devote to the fundamental sciences and the methods of their application in the investigation of disease prior to his admission to the wards. I have already given some indications of the lines which I think that teaching will follow. The physiology will be more comprehensive than is now possible, and it will include a good amount of biochemistry and biophysics. Physics will be carried a good deal higher than the present elementary standard and will be so shaped as to have a very definite bearing on the subsequent clinical work. I should expect, too, more emphasis to be laid on pathology. On the other hand, I venture to think that the study of materia medica is far too detailed and extensive, and I would hazard the opinion that at least two-thirds or three-fourths of the British Pharmacopœia could with advantage be discarded. When the student had entered the wards he would get what he gets now—a sound general grounding in medicine and surgery, but after this stage he would be required to make a choice, and his subsequent course would vary according to the career which he ultimately had in view. By this time it would be realised that it was not humanly possible to cover everything, and that instead of having a nodding acquaintance with several specialties the more excellent way would be to give the student the best possible training in general medicine and surgery, allowing specialisation only in those subjects to which the student intends to devote himself in his practice. Thus the man proposing to take up public health work would take up a course comprising subjects like bacteriology, epidemiology, statistics, hygiene, &c. The surgeon would naturally take more anatomy, &c. The specialists would likewise take such subjects in which they intended to specialise. Each student would thus have at his medical school courses for a thorough training in the sciences on which the art and practice of medicine are based, a comprehensive training in general medicine and surgery, and a good acquaintance with a certain number of the specialties.

ORGANISATION OF MEDICAL PRACTICE.

What of the organisation of medical practice? That I have, perhaps, foreshadowed to some extent in the training. I think that in the big cities and in fact in most urban areas the medical man practising alone will gradually make way for the group, a partnership or association. It will no doubt vary in size—it might in some cases contain as many as six or more individuals, in others, in the smaller towns, it would be less. The group would be organised on the basis of the division of labour working on the lines of specialisation. The specialisation, however, would not be so intense as to divide the group into water-tight compartments; the training each man would have received in fundamentals and in general medicine and surgery would render him competent to deal with ordinary cases and to recognise anything which necessitated further and detailed investigation and the services of a specialist. These cases would then be handed over to the appropriate specialist of the group, one of whom would certainly be a pathologist, while part or the whole of the group could, when necessary, meet in consultation in cases of any great complexity. In this connexion I foresee an important development. Our so-called "pharmaceutical chemists," who at the present time are simply dispensers and compounders of medicines and vendors of innumerable "patent" nostrums, will be available for the carrying out of many of the chemical investigations necessary in the elucidation of disease. This will be made possible by the education courses and curriculum of the pharmaceutical chemist being improved, modified, and extended. The establishment of the new degree in pharmacy at the University of London will, I trust, help much in this direction.

Associated with each group would be an institution for the reception of patients, which I may call the "health institute" or hospital. It would not be the analogue of the present nursing home, but would approximate more to a hospital in respect of its organisation and its resources, and would be run in association with a group of nurses organised on lines somewhat similar to those of the doctors. The fees would be graduated according to the financial position of the patients, and I do not think that there would be any risk whatever of its financial soundness. It would be linked up with other institutions of a similar nature and with sanatoria up and down the country allowing of the treatment of patients in different climates, and also of a wider choice of specialists.

This coöperative plan is, you will recognise, directly along the lines of development which has in fact already been followed. That is, indeed, one of its merits in my judgment. But it is, of course, much more than a mere partnership based on personal or similar considerations: it is a deliberate association of men trained for the express aim of acting together and of pooling their various attainments, and the "health institute" is a recognition of the fact that modern medicine requires, even demands, coöperative and institutional investigation and treatment. With this it is fairly obvious that a pretty radical alteration in the National Insurance Acts must follow, and I for my own part would not be sorry. I am convinced that under group arrangements such as this it would be easily possible to hand over to the profession the responsibility for the health of the people, and I am sure that the profession would rise to that responsibility.

PUBLIC HEALTH.

I have not time, I am afraid, to deal at any length with the organisation of public health in the future. The present arrangements, in spite of improvements of recent years, are far from satisfactory. There is really no justification for responsibility being divided among three or four different departments of State, and it is difficult to see why the various public services, such as tuberculosis, venereal diseases, vaccination, medical research, &c., are not centralised at any rate in the larger towns, and brought under one roof. Here is a subject in which the medical man of the present can, I think, bestir himself with advantage.

I do not think, if I may say so, that the medical man of the present plays the part which he should do in public affairs, Imperial and local. I know, of course, that the demands on his time and energies are considerable and his leisure scanty, but democratic government will never reach its fullest development

unless it can command the services of educated, trained men who are in a position not only to give expert advice on those questions affecting the health of the community which are continually coming up for discussion before Parliament and local authorities, but who are also willing to bear their part as good citizens in all that touches the public weal.

THE MEDICAL MAN OF THE FUTURE AND THE NAVAL, MILITARY, AND AIR MEDICAL SERVICES.

I feel a little diffident in forecasting what will be the position of the medical man in the future as regards the Navy, Army, and Air Force. In former times it used to be said that the three fundamentals essential and important in a fighting force were courage, genius, health. First courage, next genius, and lastly, health. Certainly in the wars of former days courage and genius were looked upon as being much more important than health, but commencing with the South African War in 1900 and afterwards in the Great War, health has been looked upon as being quite as essential as the other two. Two primary difficulties have always been met with in the past in connexion with the professional or medical efficiency of the Navy and Army Medical Services. First, administration or the occupation of administrative posts has always been looked upon as being the sure and easier avenue to promotion, especially to the highest offices in the service, whilst the clinical route of approach to promotion, especially to the highest posts, has occupied a very inferior position; and secondly, the clinical facilities available for the regular instruction and practice of the naval and army medical officer have been very deficient. The medical officer of a public service such as the Navy and Army, who is and has been mainly employed in administration, almost invariably becomes from a practice point of view a mere automaton—quite, unable to grasp the essentials for the successful investigation and treatment of disease. Such was the case during the Great War, according to my somewhat extensive experience. In the future I think arrangements must be made whereby a considerable proportion of the civil medical profession shall always be available for immediate service with the Navy, Army, and Air Force, and shall occupy a proper and not a subordinate and inferior position. In addition, extra provision must be made for the regular training of Naval, Army, and Air Force medical officers in well-equipped schools, provided with a sufficiency of clinical material.

V.

FIFTY YEARS OF MEDICINE.

Introductory Address at the Opening of the Medical Session, King's College Hospital, on Oct. 1st.

BY SIR DAVID FERRIER, M.D., F.R.S.,

CONSULTING PHYSICIAN TO THE HOSPITAL; EMERITUS PROFESSOR OF NEUROPATHOLOGY, KING'S COLLEGE.

IT is now 50 years this day since I last had the honour of giving the introductory address at the opening of the session of the King's College Medical School. Half a century is a long period in one's professional life to look back upon, yet I often find it difficult to realise that so many years have elapsed. It is one of the proclivities—or perhaps infirmities—of age to like to revert to the past; and if I may indulge in this respect for a few minutes, it is not as a *laudator temporis acti*, but in order to draw some lessons which may have a useful bearing on the present and the future.

At the time of which I am speaking—viz., 1874—Listerism was only in its infancy, and but slowly making way against great inertia, as well as much active opposition. For although in 1867 Lister had been successfully applying to surgery Pasteur's doctrines as to the germ theory of fermentation, his views had not yet been generally accepted, or extensively put in practice. Surgical operations were relatively limited in range, and followed by frightful mortality; surgical wards often reeked of suppuration and sepsis; and many surgeons were still operating with instruments, and in garments, swarming with putrefactive germs. As late as 1880—three years after the advent of Lister to this hospital—when my late colleague, Prof. Gerald Yeo and I, at a meeting of the British Medical Association, showed that with antiseptic precautions the most formidable operations could be made on the brain without risk of the otherwise fatal meningo-encephalitis, there were not wanting eminent surgeons and others who shook their heads incredulously, or expressed their entire disbelief in the germ theory of sepsis. It is difficult for those of you of the present generation to realise the state of affairs not only in surgery, but in other departments of medicine 50 years ago. Our remedies were for the most part purely empirical. The science of pharmacology was only in its infancy, and we could give little or no reason for our prescriptions beyond the fact that they had been found useful by our predecessors. Yet it should never be forgotten that, so far as pure observation could carry them, unaided by other than the most simple instruments of precision, the physicians of old have never been surpassed in their delineation of the symptoms and natural history of disease, and skill in prognosis. The names of Sydenham, Heberden, Bright, Matthew Baillie, and many others among our countrymen, will compare favourably with any of those of the present day. If their theories as to ætiology and pathology were often founded on what we can now smile at as crude assumptions, we need not pride ourselves unduly on our superior knowledge. Considering the transformation or revolution that is taking place at the present day in our conceptions of life, matter, and energy, it is not unlikely that some one of my audience, reviewing the progress of medicine 50 years hence, may have to comment in a similar manner on the primitive character of our present-day notions on many problems of health and disease. Still, when all is said, I think, as regards scientific medicine, we may, like the son of Tydeus, reasonably "boast that we are much superior to our fathers."

THE VALUE OF EXPERIMENT.

Now what has been the principal cause of this superiority? Unquestionably, in my opinion, it has been obedience to the illustrious Harvey's injunction to the College of Physicians to "search out the secrets of Nature by way of experiment." It is by the application of the experimental method to the elucidation of vital problems that within the last half century medicine has been so transformed that its progress has with truth been characterised as a veritable romance. As the late Lord Fletcher Moulton in his evidence before the Royal Commission on Vivisection has said: "No man who knows anything of science has any doubt whatever that the right way to advance knowledge is by experiment. When we are reduced to observation, science crawls. When, and in proportion as, you can use experiment, the science advances rapidly. The more complex the subject is, the more factors there are at work, the more essential the experimental method is, and the most complex of all phenomena are those that relate to human beings."

What can be considered more marvellous than the powers recently conferred on medicine by physiological experiment on the ductless glands and their secretions? As the late Sir William Osler has picturesquely expressed it: "No such miracles have ever been wrought by physicians as those which we see in connexion with the internal secretion of the thyroid gland. The myth of bringing the dead to life has been associated with the names of many great healers since the incident of Empedocles and Pantheia; but nowadays the dead in mind, and deformed in body, may be restored by the magic wand of science. The study of the interaction of the internal secretions, their influence on development, upon mental powers, and

upon disorders of metabolism, is likely to prove in the future of a benefit not less remarkable than that which we have traced in the infectious diseases" ("The Evolution of Modern Medicine"). Osler's prediction has been amply verified within the few short years since his lamented death by that most recent triumph of experimental vaccine, the discovery of insulin, the "elixir vitæ" to thousands of sufferers, living precarious lives, with fatal coma, like the sword of Damocles, threatening to descend on them at any moment. How this appears to unprofessional eyes may thus be described in the words of Lord Knutsford in the recent debate in the House of Lords on the Dogs' Protection Bill: "You see a patient come in to hospital with large eyes, sunken face, and stooping figure. He is given insulin. It is not a conjuring trick. It is a miracle. In quite a short time the man is bright and happy and smiling again, and his disease is forgotten."

THE WORK AHEAD.

But while we can boast of triumphs such as these, we cannot afford to rest and be thankful. The problems that demand solution are many and urgent. Though we know a good deal as to the characters, mode of growth, and dissemination of many of the infective germs, we as yet know little or nothing of others—the so-called filter-passing germs—and still less any satisfactory method of combating their ravages. Our knowledge of cause unfortunately outruns our ability to prevent or cure. The tubercle bacillus was discovered over 40 years ago; and yet, in spite of all our efforts, it slays its thousands every year; and the same has to be said of other diseases of men and animals, which cause incalculable loss of health, wealth, and life. The state of affairs is still worse in regard to diseases of which we know neither the cause nor the cure, such as disseminated sclerosis, progressive muscular atrophy, paralysis agitans, and the like. Most prominent of all in the eyes of the world at the present moment is the problem of cancer, which unhappily seems to increase as civilisation advances. Our hopes were recently raised high that here again Toronto had achieved another magnificent triumph, only to be shattered by further examination. We need not, however, despair, only we must guard against being over-sanguine as to the results of investigations of a purely ad hoc character. These will no doubt narrow the approach and pave the way to the ultimate solution; but it is quite possible that the key to the mystery will, after all, be given by some research undertaken for its own sake, or without any obvious bearing on the problem in hand. Many such instances might be quoted. It would, for example, seem a far cry from a jelly-fish to a human being, yet, as Lewis has recently shown, Romanes's experiments on the bell of the Medusa have furnished the explanation of that most dangerous state of the human heart, auricular fibrillation, and the rationale of its treatment.

STRAW FOR THE BRICKS.

The history of science affords abundant illustrations of the fact that the most important and far-reaching consequences may flow from apparently insignificant beginnings. There is not a single addition to natural knowledge, physical, chemical, or biological, which does not find its appropriate place in the grand edifice of science and the powers it confers on mankind. The conquest of ignorance is our only sure defence against the diseases and other evils with which we are constantly threatened and assailed. Yet, though pure science receives much lip-homage, it receives but little general support, and medico-biological research in particular not only little support, but much ignorant opposition unless it gives immediate protection against disease, or promises absolution from the consequences of sins against the laws of health and indulgence for future transgressions. One is constantly met with the question, "What is the *practical* object of your proposed research?" If you cannot make this sufficiently plain to the unenlightened, you are apt to be regarded as a visionary, out of touch with the realities and needs of the world. This attitude is unfortunately not confined to the laity, but is all too frequently found even in our own profession.

While there is no branch of science which does not bear directly or indirectly on practical medicine, that which, above all others, most intimately concerns you in your study of disease is physiology—appropriately termed the Institutes of Medicine. It is only by an intimate knowledge of the functions of the various tissues and organs of the body and their interrelations, practically applied in the clinical wards and pathological theatre, that you can appreciate the true nature of disease and the meaning of its symptoms. And it is this alone that can furnish a sound basis of independent judgment, and secure freedom from slavish adhesion to any system, or blind obedience to the words of any master.

UNCHANGING ESSENTIALS IN THE ART OF MEDICINE.

It would, I think, be a great misfortune if the increased facilities which scientific methods have provided us with for the diagnosis of disease, such as the X rays, electrocardiograph, biochemical and other tests, should lead to atrophy of the *tactus eruditus* and other trained faculties of the skilled practitioners of old, or to neglect of the simple or unaided methods of diagnosis, such as percussion, auscultation, and the like. It would not be well if a surgeon were unable to diagnose the existence of a fracture or dislocation without the aid of a radiogram; or for a physician to be dependent on similar aid for the recognition of a consolidation of the lung, or the existence of a tumour in the brain. Some indications, however, have been noted by our examiners of a tendency on the part of the younger generation to neglect the simpler methods and to rely too exclusively on aids which may not be available at the critical moment. Delicate physical and chemical apparatus are necessary in the clinical laboratory, but the results must be incorporated with those of other methods, and capable of application by the practitioner in the ordinary course of his work. The various methods should supplement but not supplant each other, and as we see clearly only what we are prepared to see, clinical vision should be sharpened rather than dulled by the light of science.

Nor does scientific pharmacology necessitate the abandonment of purely empirical methods which long experience has proved to be of value in the relief of suffering. The theories on which they have been based may appear to us fanciful, and we may not be able to give a rational explanation of their *modus operandi*, but it would be foolish to discard them. There are many remedies, now out of fashion, which are still relied on, and apparently on good grounds, by physicians of ripe experience and sound judgment. Nor should the study of the scientific bases of medicine ever be divorced from the most thoroughgoing study at the bedside. The human body is a much more complex organism than that of the lower animals, and infinitely more so than any mere physical or chemical compound. The agents employed in the treatment of disease do not necessarily act in vivo only as they do in the test-tube. The living body is, as Prof. H. H. Dale has said, in many ways an essential partner in its own cure. And, more particularly, the psychical side of man—the impulses and emotions by which he is swayed—constitutes a factor which highly complicates the action of all the remedies of the Pharmacopœia. Though much valuable work has been and is being done in this direction (Lange, Pavlov, Cannon, and others), we as yet know comparatively little as to the mode of origin and channels of transmission of those corporeal influences; but it is certain that the pleasurable emotions such as faith and hope *exalt*, while the depressing emotions, such as fear, doubt, and anxiety, *depress* all the vital functions. How to promote the one and combat the other is often more a mark of therapeutic skill than a judicious selection from the Pharmacopœia.

SUGGESTION IN HEALING.

This has long been implicitly recognised and acted on in daily life. Prescriptions, apart from any intrinsic value they may possess, are also largely vehicles of suggestion. Everyone knows that a prescription by the eminent physician, Sir A. B., of Harley-street, may have a very different therapeutic value from exactly the same prescription given by Mr. C. D., of Little Pedlington. And there is a grain of truth in the remark by Petronius Arbiter, the cynical courtier to the Emperor Nero, that a physician is "only a satisfaction to the mind." I have no intention of critically examining the respective merits or demerits of the various methods of suggestion, but would merely remark that suggestion, however induced, should be kept in its proper place. No amount or kind of suggestion will, for instance, reduce a dislocation or remove a tumour from the brain. Apart, however, from special methods of suggestion, however commendable some may be in certain circumstances, it must ever be the endeavour of the physician to mobilise all the defences of the organism, psychical as well as physical, against the attacks of disease and for the restoration of health. There is one factor within reach of you all—surpassing all others in importance—and that is *a thorough knowledge of your work*. This by itself can outweigh a multitude of defects, and will constitute the best and most solid basis of that self-confidence and decision which are so necessary to inspire faith and trust on the part of those with whom you have to deal.

A CRITIQUE OF THE SURGICAL TREATMENT OF ANGINA PECTORIS.

BY SIR JAMES MACKENZIE, M.D. EDIN., F.R.C.P. LOND., F.R.S.

THERE has, in recent years, been an endeavour on the part of surgeons to seek for new fields, and there seems no region of the body which the surgeon is not prepared to invade. The impression has got abroad that the feats of the surgeon are indications of the progress of medicine. When operations are carried out with a full knowledge of the morbid conditions which it is intended to relieve, and with a knowledge of the functions of the structures which the surgeon cuts in his operation, there might be some reason for regarding such surgery as an example of the progress of medicine, but when the surgeon is profoundly ignorant of the morbid condition for which he operates, and of the functions of the structures which he mutilates, it is impossible to conceive anything more detrimental to progress. At one time the surgeon was supposed to have a knowledge which would enable him to make not only a diagnosis but a prognosis, so that he could tell whether his interference would be to the patient's benefit. But the trend of modern medicine with its specialism is, that the surgeon dispenses with this kind of knowledge and relies upon others for instructions when to operate.

This tendency is well illustrated in the surgeon's excursions into the treatment of angina pectoris. I do not suppose there is a surgeon who would even pretend to understand the morbid condition which gives rise to the symptom-complex called angina pectoris. The knowledge of the functions of the vagus and the sympathetic which the surgeon cuts is so imperfect that neither he nor the physician who advises him understands but a fraction of the functions of these nerves.

Present Knowledge of Causes of Heart-Pain.

Before such a formidable and dangerous operation is undertaken it is advisable that the state of knowledge of the diseasesd conditions which are associated with, or give rise, to angina pectoris should be recognised.

It is a reflection on the state of medicine that such a clamant, distressful, and universal symptom as pain should be so little understood, that it is impossible to tell what the agents are which are concerned in its production, and it is not even known how to proceed to find them out. It is recognised that there are structures which, when mechanically stimulated, produce pain, and other structures which when so stimulated do not produce pain, but which by other forms of stimulation do give rise to pain. Anatomy cannot tell us the difference in the nerve-supply which this observation indicates, nor can physiology tell us the vital processes concerned in the production of pain in organs that cannot be mechanically stimulated to produce pain. The consequence of this state of affairs is that a subject like angina pectoris is still a matter for vague speculation, and the employment of such drastic treatment as a surgical operation for a condition so little known does not redound to the credit of medicine.

The aim of surgical treatment is not to "cure" the disease but, by cutting the nerves which convey impulses from the heart to the central nervous system, to prevent the patient feeling pain. These nerves are the sympathetic and vagus—two nerves whose functions are as imperfectly understood as the nature of angina pectoris. It must be remembered what little is known of these nerves from experiment is limited practically to the *efferent* part of the nerve. The part played in the economy by the *afferent* part is unknown save for some crude experimental results—and these are imperfectly interpreted. It is the *afferent* nerve which the surgeon seeks to cut, and so this operation is one where structures are cut whose function is unknown, beyond the fact that they convey impulses from the heart to the central nervous system for a condition that is still the subject of speculation.

After-History of 1000 Patients.

In an analysis of over 2000 patients who suffered from heart pain lately undertaken by me, the notes of 1000 were discarded as the histories of the patients after the notes were taken were not satisfactorily recorded. In the remaining 1000, the future course of the health of the patients was recorded with sufficient precision to enable certain conclusions of value to be drawn.

The patients could be divided into two groups. One, the smaller, in which the pains were not associated with any disease of the heart, and another group where such disease was present. The pain, its situation and onset, and the other symptoms associated with it, were the same in both groups.

In angina pectoris the chief structures concerned are the nervous system and the tissues of the heart, and disturbance of either may result in pain. In the former group the pain is due to disturbance of the nervous system. It has long been recognised that in certain forms of ill-health, symptoms due to disturbance of organs which are themselves perfectly healthy may result from disturbances of the nervous system. The most striking of these is vomiting. Pain also is a frequent expression of a similar form of disturbance, so that the pain and other symptoms associated with angina pectoris are not infrequent in people whose hearts are healthy, but who suffer from ill-health which disturbs the nervous system. The vast majority of these patients are women under 50 years of age. During the war numbers of young soldiers showed all the signs of angina pectoris, but they all suffered from some infection, often too obscure for identification, but which in some instances was ultimately found to be "trench fever."

I have followed some hundreds of these cases of "secondary angina" for many years, and not one has died from an affection of the heart—the heart symptoms in every case disappeared, many were restored to health, others were crippled from the persistence of the original complaint or from some of its effects.

In the larger group, "Primary Angina Pectoris," there are morbid changes in the structures of the heart which are progressive. The first appearance of the signs of angina is, as a rule, insidious, being usually a slight sense of discomfort, felt across the chest generally on making some form of effort which had hitherto been performed with perfect ease. At first the discomfort may appear at rare intervals, and is brushed aside as indigestion or ignored. In course of time it becomes more frequent, more easily provoked, and may culminate in violent pain, occurring in "attacks." There may only be one severe attack, or there may be a series coming on at intervals for days, weeks, or months. Complete rest being enforced for a period the attacks subside and the individual may be free from attacks for many years, or there may be a recurrence in a few months, but the tendency never disappears—the attacks being apt to come on under particular circumstances, as on walking after a meal, or against a cold wind, or on first starting after a rest—the patient nevertheless being able to lead a useful life.

Morbid Changes Found.

In nearly every instance slowly but surely the response to effort becomes restricted and the pain tends to appear with ever-increasing facility. When death arrives, it may be many years after the onset, morbid changes are invariably found at the post-mortem examination, although the physical examination during life may have given no signs of anything amiss.

The morbid changes in the vast majority of cases are found mainly in the coronary arteries and in the muscle of the left ventricle. If these changes and the effects they produced during life be studied, some idea can be formed of what "angina pectoris" signifies. Although no two cases are identical, in regard to the part affected, yet the nature of the morbid process and its resultant effects are remarkably alike in the majority. These consist of such narrowing of the lumen of some part of the coronary artery, that the supply of blood to the muscle is so diminished as to impair not only the functional efficiency of the muscle, but to lead to degeneration and destructive changes in the heart muscle.

If it be borne in mind that the healthy coronary artery is very distensile, and that when the heart is called upon to increase its work in response to effort, there is required a greatly increased supply of blood, not only is the reason for the distensile artery apparent, but also the effect which is bound to follow when the lumen of the artery is narrowed and its walls become rigid.

Angina pectoris is the subject of investigation at the St. Andrews Institute, and so far, post-mortem examinations have been made on seven patients, of which the three figures are typical. The results of these examinations are like the 50 odd post-mortem examinations I had made on my own patients, and correspond with numerous published records since Heberden and Jenner's day, so that they may be taken as typical of the more common forms of angina pectoris.

If one inquires what were the evidences shown by such damaged hearts during life, pain, especially in response to effort, was common to all. The processes which led to these morbid changes must have taken many years. Indeed, one can reasonably infer that they must have been going on for many years before the response to effort was so diminished as to produce the early signs of distress. It is therefore impossible to tell the duration of the morbid processes that lead to angina. The duration of the symptom of "angina pectoris" can only be estimated from the time that pain appeared, and therefore its onset has no relation to the onset of the morbid process which induces the pain. As this symptom depends not only on the morbid condition, but also on the exposure of the individual to conditions that favour the production of pain, the history of the onset is of doubtful value for any purpose. One of my patients reached the age of 80 before he had any pain, and it came on because he was forced to run 100 yards at the top of his speed—an amount of effort he had not undertaken for 20 years.

The Removal of a Danger-Signal.

Study of the morbid changes in the hearts of patients who have suffered from angina pectoris brings clearly before the mind what the condition is that the surgeon is to treat when he proposes to operate. No one would claim that he can "cure" angina pectoris by operation or any other procedure. All the surgeon could hope to do would be to cut the nerves that convey the impulses which give rise to pain, from the damaged heart to the centre of consciousness.

Is such a procedure wise and for the best interest of the patient? Putting aside the question of what damage may be done by the cutting of such important structures as the sympathetic and vagus nerves—nerves whose functions, be it noted, are, even yet, scarcely understood—and apart from the danger of the operation and the possible damage which may result from the mutilation that accompanies such an operation, the question arises, Is it to the best interest of the patient that he should be deprived of a signal, it may be, of great value?

If we look at these hearts it is manifest that they could only accomplish a small part of the work which a heart should perform. Muscles like the heart can be forced to work till a stage is reached when they can do no more work. When this stage is reached, no blood can be thrown out and the consequences of a failure of output are unconsciousness and death. Moreover, one of the provoking causes of ventricular fibrillation is a defective blood-supply and this is a common cause of death in angina pectoris.

On the other hand, a sign given out by muscle when exhausted, and particularly when forced to work when the blood-supply is defective, is pain. In the early stages of the suffering, the failure to recognise the significance of pain often leads the individual to persist in efforts beyond the heart's capacity, with the result that the exhaustion of the heart muscle reaches a stage that pain of a great severity is induced which, as already said, may last for a considerable time—until, indeed, a measure of strength is restored to the heart muscle. Great numbers of patients get to recognise the significance of pain and by taking thought of the circumstances that provoke it, can lead useful lives free from distress for many years.

One could cite many instances which throw light upon this matter, but one may suffice as it illustrates several very important features which have not received that consideration which is their due. A man began to suffer from angina pectoris, the pain coming on only in response to effort. An examination revealed nothing but a systolic aortic murmur. A year later he began to have attacks of loss of consciousness, which were found to be due to partial heart-block. After some months the block became complete, the pulse being constant at the rate of 30 per minute. The attacks of loss of consciousness ceased and he suffered no more from pain. On effort he could do less, and was stopped on account of a sensation of weakness and breathlessness. He dropped down dead three years after the first appearance of pain. At the post-mortem examination the aortic valves were sclerosed, and the sclerosis extended up the aorta and embraced the mouths of the coronary artery, which was rigid and narrowed, it extended down into the heart muscle and had destroyed the auriculo-ventricular bundle.

It is thus seen that these diverse phenomena, the aortic systolic murmur, angina pectoris, and heart-block, were all produced by the same morbid process. But the point of interest here is the pain and its cessation. The narrow, rigid orifice of the coronary artery manifestly would not dilate to permit an increase of blood to meet the requirements of the muscle, and in consequence the muscle, like all muscles forced to work with deficient blood, gives rise to pain.

When complete heart-block set in, it was impossible for the ventricle to be stimulated to increased effort, for the rate of the ventricle never varied from 30 per minute at rest or on violent effort. Consequently

there was no demand for an increased blood-supply, and effort was limited, not by pain, but by sensations provoked by a diminished output of blood from the heart.

Pain not in Itself Dangerous.

Great as the distress is which pain produces, pain itself is in no sense a dangerous symptom. It may be associated with conditions which are dangerous, but such dangers are not rendered less dangerous by easing the pain. Indeed, it often is a beneficent agent, in directing attention to the presence of a morbid condition, and more especially in warning that the persistence of a particular condition is harmful. It is in this latter sense that pain is beneficent, and used in conditions like angina pectoris it forms one of the most helpful indications for preserving the efficiency of the heart. It is manifest that the amount of work the damaged heart can perform is limited, and the indications for treatment are to save the heart muscle from over-exertion. The measure of the amount of work is found in what can be done without distress. It is well recognised that, before pain arises, there are faint signs experienced which indicate that with persistence pain will be induced, so that taken as a signal to desist, the individual then knows what amount of effort it is safe for him to undertake. In this way many people are able to pursue even laborious occupations with no discomfort and no danger.

To remove this valuable indicator in the present state of our knowledge is, to my mind, extremely hazardous and bad practice. When a better knowledge is acquired it may be found of value in some instances, but so far as I can see there are no indications which would enable suitable cases to be recognised. I have carefully studied the published records of cases operated upon, and these records show no consciousness of that division of angina into primary, with varying degrees of morbid changes, and secondary, with no affection of the heart. Moreover, the records both before and after operation are given so imperfectly that no clear conception of the nature of the condition can be ascertained, except those who died in consequence of the operation.

It must be remembered that, though pain may be relieved, the patient is not "cured," nor is the progress of the disease stayed. As the vast majority of patients live for many years after the first appearance of angina pectoris, the fact that a patient is free from pain for months or years is not evidence that his condition is improved. Such patients as have been operated upon and have recovered from the operation would afford the opportunity for investigation, not only of the results of the section of nerves, but of the response of the heart to effort, to find out, not only how the heart's movements are affected, but what are the sensations which warn the patient of the heart's exhaustion. So far the published reports fail to afford this information.

Need for Re-Investigation of Cardiac Nerves.

The attempt to find a reason for employing surgery in the treatment of angina pectoris has revealed that very little of practical value is known about the functions of the vagus and sympathetic nerves, and in consequence plans are being formed for the reinvestigation of these nerves. Before such a laudable enterprise be entered upon it would be well for the investigators to review all the work that has been done on this subject and to study the reasons why so little is still known. It will be found that a great number of experimental observations have been made and certain reactions have been detected, but the interpretations of these reactions are imperfect and unreliable. Thus, an increase or a decrease in the rate of the heart may have been recorded, but it is not known what structures were involved in bringing about these changes in rate. The interpretation which holds the field to-day was made at a time when the presence of the conducting system was not even suspected. No movement of the heart can take place without the participation of this system, and so little is known of this system that its study can scarcely be considered to be begun.

Such observations that have been made on these nerves have been almost entirely limited to the *efferent* nerves. In clinical medicine, and especially in dealing with angina pectoris, it is the part played by the *afferent* nerves that has to be known, and except the results of some crude badly interpreted experiments, nothing is known of the afferent system of nerves. The reason for this is that the afferent system of nerves of the whole body are beyond the range of experimental observation. The most important functional part of the afferent nerve is situated in the fibrils at its peripheral distribution—in the skin, and in the substance of the organs—and it is the manner in which these peripheral fibrils are stimulated which requires to be found out. In experiment when the nerve is cut, this essential part is cut off and cannot be replaced by electrical stimulation of either cut end. It would be as reasonable to investigate sight by cutting off the eyeball and stimulating the stump of the optic nerve as to investigate the function of an afferent nerve by cutting it and stimulating its stump.

The clinical evidence of the part played by the afferent nerves is abundant. The whole series of phenomena in angina pectoris are but evidences of their activity—the pain, the constriction of the chest, the flow of saliva, and other signs are all evidences that impulses have arisen in the heart and have been transmitted to the central nervous system. So little, indeed, is known that the source and nature of these impulses is still a matter of controversy.

Such matters as these must be considered by would-be investigators, as well as the reason for the defective knowledge which continues in spite of all attempts to find out the function of these nerves. It is likely that it will be found that some concept other than those which have guided research in the past must be employed, and it may come to pass that such an investigation can only be carried out by using the opportunities of the clinical observer.

THE DANGERS OF UNABSORBABLE SUTURES IN GASTRO-ENTEROSTOMY.

WITH REPORT OF A CASE.

BY G. A. UPCOTT-GILL, F.R.C.S. EDIN.,
MEDICAL SUPERINTENDENT, QUEEN'S HOSPITAL, SIDCUP;
AND
H. B. JONES, M.R.C.S. ENG.,
RESIDENT SURGICAL OFFICER TO THE HOSPITAL.

THE following case illustrates the unfortunate results of the usage of thread or silk as a suture in entero-anastomosis.

The patient, a soldier, aged 37, was admitted to Queen's Hospital, Sidcup, Kent, on Sept. 3rd, 1923, with a history of abdominal pain and vomiting for six years, and of a perforated duodenal ulcer and laparotomy on March 29th, 1922, and a subsequent laparotomy with posterior gastro-enterostomy on Oct. 10th, 1922. He stated that since the last operation he had had constant recurrence of pain and vomiting, the attacks lasting three days to two weeks, with periodical intermission.

Symptoms.—(1) Pain, gnawing in nature, in the left half of the epigastrium, lasting two to three hours, but eased by taking food or by lying down. Patient woke about 10 P.M. to 3 A.M. every night through discomfort. He was relieved by hot fluids, bismuth, or hot flannels. (2) Vomiting was rapidly induced by the pain, which it relieved; dark in colour, bitter, slimy in nature. Heavy foods—e.g., meat, potatoes, &c.—accentuated the pain and vomiting. (3) Hæmatemesis. There had been three attacks of hæmatemesis since the last operation. Bowels not constipated; appetite very good; had lost weight.

Abdominal Examination.—Two well-healed laparotomy scars; no hernia. Splashing and gurgling over a much dilated stomach; tenderness in the left half of the epigastric

region with slight general abdominal rigidity. Nothing else abnormal detected.

X Ray and Bismuth Meal (screen and film).—Duodenal cap normal and no tenderness in this region. Large intestine slightly ptosed. First fractional test-meal (Oct. 15th, 1923): Increased total acidity and free HCl—viz., 60 to 146 per cent. From Oct. 16th to Dec. 15th, 1923, patient was kept under observation with light fish diet, large doses of alkalis and belladonna, but showed no improvement in his symptoms or general condition. Second fractional test-meal: Showed marked hyperacidity in excess of Oct. 15th. Thus the total acidity varied from 55 to 80 per cent.; in two and a quarter hours it reached 100 per cent. Free HCl 55 per cent. (0·205 to 0·235).

General Health.—The man looked ill and wearied; muddy complexion. Tongue furred, teeth fair, pharynx congested. Is of alcoholic habit. Nothing abnormal in chest, renal, or nervous systems.

Diagnosis.—The recent history of characteristic pain and vomiting, the hæmatemesis, the marked hyperacidity despite a previous gastro-enterostomy, pointed to fresh ulceration, probably gastro-jejunal.

Operation (Jan. 4th, 1924).—Anæsthesia, gas and oxygen induction followed by spinal anæsthesia (stovaine). Supra-umbilical incision. On opening the peritoneal cavity many adhesions were found. All of these were separated and ligatured or transfixed. The stoma of the old posterior gastro-enterostomy was examined and found barely to admit two fingers, and to have a hard, unyielding edge. Palpation of the stomach did not disclose any other abnormality. The stomach was then opened above the cardiac side of the anastomotic opening. There immediately presented a dark, hard mass the size of a cherry (afterwards found to be blood-clot), connected to the stoma by a long, loose pedicle. This was recognised as an old thread suture. The gastric opening was then closed and another opening made which gave better access to the anastomosis. It was now obvious that the thread suture had been used for the previous gastro-enterostomy, and had partially ulcerated out, so that the two strands were still connected to the anterior and posterior lips of the stoma, while the unattached ends, matted up with old blood-clot, moved freely in the gastric cavity. There was a large crater-like ulcer involving the anterior and posterior walls of the stoma for about two-thirds of the circumference. This extended upwards and downwards into the stomach and jejunum respectively. The whole anastomosis, with an inch of stomach and jejunum, excised. New posterior anastomosis made, using 30-day catgut and Souttar's needles. Scar of old duodenal ulcer almost healed, but slight pyloric stenosis persisted. Nothing else found. Abdomen closed in the usual manner.

Progress after Operation.—The patient made an uninterrupted recovery, and was allowed to get up in 28 days time. He was given large doses of alkalis and paraffin with an occasional aperient, and kept strictly on fish diet. He occasionally had a sharp pain in the upper right abdominal quadrant on turning over, but this has gradually decreased and should disappear.

Conclusions.

This case very aptly illustrates two important points (to which Woosley [1] drew attention in a similar case). (1) That the use of unabsorbable suture is a mistake in gastro-intestinal surgery; the suture of choice is chromic or tanned catgut. (2) If a gastro-jejunal ulcer develops it should be treated surgically and not medically—i.e., by excision of the original anastomosis and the ulcer, and a reconstruction nearer the lesser curvature. Both Walton [2] and Gronnerud [3] have given up silk or thread suture, and lay stress on their experience that since abandonment in favour of catgut they have had no incidence of peptic ulcer. Wright [4] describes a case where silk was used for an anterior gastro-enterostomy which was followed in the same year by a gastro-jejunal ulcer. This was infolded, but eventually perforated. Complete excision and a posterior gastro-enterostomy had then to be carried out, with no recurrence of any trouble two years later. He makes the striking statement that his records show 13 cases of gastro-jejunal ulceration due to silk suture. Adams [5] records the occurrence of a gastro-jejunal ulcer three years after anastomosis; a silk knot was found in the centre of the ulcer.

With such striking evidence before him of the disasters liable to follow the use of unabsorbable suture the surgeon should surely turn to other material. Thirty-day catgut, preferably on a Souttar's needle, supplies the want.

(*Continued at foot of next column.*)

LESIONS OF THE TRACHEA IN PULMONARY TUBERCULOSIS.

BY FREDERICK R. G. HEAF, M.D. CAMB.,
MEDICAL SUPERINTENDENT, WARWICKSHIRE KING EDWARD VII. MEMORIAL SANATORIUM.

THE anatomical situation and inaccessibility of the trachea may account for the small amount of consideration which it has received in cases of pulmonary tuberculosis. Yet by virtue of its position it certainly deserves attention, as it is a channel of considerable length through which many virulent organisms pass on their way to or from the lungs.

My interest in the trachea was first aroused by noticing its condition in a series of 133 autopsies on cases of pulmonary tuberculosis at Colindale Hospital, Hendon. In this series I found the trachea showed abnormal features in 44 per cent. of the cases. A small amount of congestion of the mucous membrane was not taken into account in arriving at this figure, as it was present in almost all the cases.

The lesion varied from a slight œdema of the mucous membrane to a general ulceration of the whole surface, and it was therefore possible to form a good idea of the sequence of events. The mucous membrane becomes increasingly congested until it is a deep purple in colour and considerably thickened by œdema. The surface then begins to desquamate and small superficial ulcers form. These gradually coalesce so that a large irregular shallow ulcer is formed, having a slightly raised edge but with very little induration. The walls are ragged and soft, and are surrounded by an area of deeply congested tissue. The lesion is generally confined to the area just proximal to the bifurcation of the trachea, but occasionally assumes a diffuse form, the whole surface of the trachea becoming covered with numerous irregular shallow ulcers.

In 68 per cent. of the cases in which ulceration was present the lesion was more pronounced on the right side, but occasionally it becomes localised in the middle line and then the ulceration assumes a more penetrating character, and the lesion is deep with indurated walls. In one of my cases the base of the ulcer exposed the pre-tracheal muscles and fascia over an area half an inch in diameter, almost constituting a spontaneous tracheotomy. The relation of ulceration of the trachea to that of the larynx was worked out in order to determine the relation between them, but it was found that in the 58 cases which showed a pathological condition of the trachea the coexistence of definite ulceration of the trachea with infiltration or ulceration of the larynx occurred in all but two cases, although in the 81 cases of laryngeal tuberculosis (both extensive and slight) the trachea escaped 25 times. This compares fairly favourably with the Brompton Hospital figures, in which series of 214 cases the trachea was affected and the larynx escaped 13 times, but 74 cases showed ulceration of both larynx and trachea.

On reviewing the clinical notes of the cases which exhibited gross tracheal lesions, I found that all the patients had complained of a loud distressing cough of a paroxysmal character and very refractory to treatment. With the cough there was deep-seated retro-sternal pain and a raw aching sensation across the chest after a bout of coughing. All the cases suffered from dyspnœa and a feeling of tightness across the chest. None exhibited any superficial tenderness over the sternum. Generally there was little sputum, and the lungs at autopsy displayed extensive fibrosis.

Treatment seems to have been difficult and at most only palliative, but a fair amount of relief from the painful bouts of coughing was obtained by frequent insufflations of pulv. anæsthesin and orthoform in equal parts, administered through a Leduc's tube.

(*Continued from previous column.*)

UNABSORBABLE SUTURES: REFERENCES.

1. J. H. Woosley: Surg. Clinics, N. Amer., iii., 656–671. 2. A. J. Walton: Surgical Dyspepsias, pp. 350–360. 3. P. Gronnerud: Etiological Relations of the Sequelæ of Gastro-Enterostomy, Ann. Surg., 1917, lxvii., 177–183. 4. G. Wright: Brit. Jour. of Surg., 1919, vi., 390–393. 5. J. W. Adams: THE LANCET, 1922, i., 16.

ANTIPNEUMOCOCCAL SERUM IN THE TREATMENT OF LOBAR PNEUMONIA.

AN ANALYSIS OF TWENTY-SEVEN CASES.

BY A. I. G. McLAUGHLIN, M.B., CH.M. SYD.,
LATE RESIDENT MEDICAL OFFICER, CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, VICTORIA PARK, E.

THE modern treatment of pneumonia with antipneumococcal serum dates from the discovery of the pneumococcus in 1884 by Fraenkel.[1] Early attempts at serum therapy include those of G. and F. Klemperer[2] (1891), Foa and Scabia[3] (1892), Washbourn[4] (1897), Pane[5] (1897), and Neufeld and Händel[6] (1912). Truche, Cramer, and Cotoni[7] in 1911 demonstrated the virulence of the pneumococcus in the mouse, and thus originated a reliable method of isolating the organism from the sputum. In 1913 Dochez and Gillespie[8] classified pneumococci into four groups by means of immune sera. Avery, Chickering, Cole, and Dochez,[9] of the Rockefeller Institute, in 1917 published a monograph concerning the treatment and prevention of lobar pneumonia by means of antipneumococcal serum. Among later important publications may be mentioned a monograph from the Pasteur Institute by Cotoni, Truche, and Mlle. Raphael[10] (1922), and a report to the Medical Research Council by Prof. E. E. Glynn[11] (1923).

The Clinical Material.

The present series consists of 27 cases of lobar pneumonia (Series A) admitted to the hospital during 1923 and 1924, and treated with antipneumococcal serum. For purposes of comparison, the last 27 cases of lobar pneumonia (Series B) admitted to the hospital before the introduction of the serum have been analysed. While this group of cases is not regarded as a completely satisfactory control, the comparison with the serum-treated cases is interesting.

In both Series A and B 21 were males and 6 females. The average age in Series A was 31·7 and in Series B 37·2 years. The majority of cases in both series occurred in the months of March, April, May, and June. In Series A the right lung was affected in 17, the left in 7, and both lungs in 3 cases; in Series B the right lung in 13, the left lung in 11, and both lungs in 3 cases. Of the serum-treated cases 3 died, and of those not treated with serum 7 died. Of the 3 deaths in Series A, 2 were in females. The first patient, who was 16 years of age, was admitted on the fourth day of the illness. Pneumococcus Type 2 was isolated from the sputum. Signs of consolidation were present in both lobes of the left lung; 50 c.cm. of Type 1 serum had been given. She died on the ninth day of the illness. The second, a female of 65 years of age, admitted on the eleventh day of the illness with signs of consolidation in both lungs, died 18 hours after admission. The third, a male aged 32 years, was admitted on the fifth day of the illness. Signs of pneumonia were present over the whole of the left lung and the lower two lobes of the right lung. Pneumococcus Type 1 was isolated from the sputum; 250 c.cm. of Type 1 serum were given intravenously, but the patient died 48 hours after admission. The extent of the pneumonic process was confirmed by autopsy. Of the 7 deaths in Series B all were in males. Two were due to empyema (one interlobar), one was due to right lobar pneumonia complicated by alcoholism, and the remaining three cases died from uncomplicated pneumonia.

It is noteworthy that in three cases of Series B empyema followed the pneumonia, while in Series A no cases of empyema occurred. In one case of pneumonia with Type 1 pneumococcus horse serum in large quantities was given in order to determine whether the bulk of serum injected was responsible for the fall in temperature. This patient developed a pneumococcal empyema.

The Serum Employed.

The therapeutic antipneumococcal serum Type 1, prepared by Burroughs and Wellcome, is used. It has been found by American observers that the results given by the specific sera for Types 2 and 3 and Group 4 are not satisfactory, and that the use of polyvalent sera has not been followed by definitely striking results. On the other hand, in France polyvalent serum has been successfully employed, for instance, by Cotoni, Truche, and Raphael.[10] These workers prepare the serum by inoculating animals with virulent strains of pneumococci regardless of their agglutinating type, which they hold is not correlated with their pathogenic properties. A series of animals is inoculated, each with a different strain, and the resulting sera are mixed.

Method of Typing Pneumococci.

The sputum of each patient on admission to hospital is examined for pneumococci, and the type is determined in the following way. An emulsion is made of the sputum in sterile broth and 0·5 c.cm. is injected into the peritoneal cavity of a mouse. If a virulent pneumococcus is present, the mouse usually dies within 24 hours. The peritoneal exudate is washed out with 2 c.cm. of sterile normal saline, and a thick suspension of organisms obtained. A film of the suspension is stained by Gram's method, and examined microscopically to demonstrate the presence of a Gram-positive diplococcus. The suspension is centrifuged at low speed for one minute in order to eliminate most of the cells. After the cellular elements have been removed the suspension of diplococci is tested for bile-solubility to establish the identity of the pneumococcus. The suspension of pneumococci is titrated by the microscopic method against agglutinating pneumococcal sera Types 1, 2, and 3 (B. W.). Dilutions of 1 in 5 and 1 in 10 are made and incubated at 37° C. for 15 minutes. Agglutination occurs in the corresponding type. If no agglutination takes place, the pneumococcus is considered to belong to Group 4.

Incidence of Types of Pneumococci.

Virulent pneumococci were isolated from the sputum in 24 instances. In two of the remaining cases the injection of sputum failed to kill the mouse, and in the third the properties of the organism were not investigated. Of the 24 cases in which virulent pneumococci were found, 14 were Type 1, 4 were Type 2, and 6 belonged to Group 4. All the Type 1 pneumococci isolated occurred in males. No Type 3 pneumococci were isolated. The predominance of Type 1 pneumococcus in this series is in accordance with the findings of Dochez and Gillespie,[8] who found 35 Type 1 pneumococci in 74 cases.

Routine Treatment.

As soon as the patient was admitted to hospital and the diagnosis established, inquiry was made concerning previous injections of serum. When a history of previous injections was obtained, 1 c.cm. of horse serum was injected subcutaneously to determine the presence or absence of protein sensitisation. If no local or general reaction occurred within an hour, 50 to 100 c.cm. of antipneumococcal serum were injected intravenously. This was carried out before the result of the sputum investigation was known. When Type 1 pneumococcus was found in the sputum the injections were repeated every eight hours until the temperature fell to normal and the pulse-rate dropped below 80. If pneumococci belonging to other groups were found, the injections were sometimes continued to observe the effect, but usually they were discontinued. The quantities injected ranged from 50 to 400 c.cm.

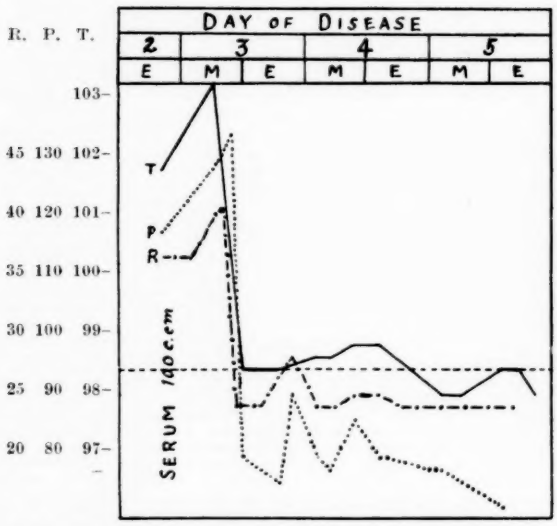
The apparatus consisted of two funnels, for serum and normal saline respectively, united by rubber tubing to a Y-shaped glass tube which in turn was attached to th infusion needle by another piece of rubber tubing. The needle was introduced into the vein, and about 5 c.cm. of warm saline allowed to enter the vein, followed by a few drops of serum (warmed to 100° F.) mixed with a further 5 c.cm. of saline. After waiting two or three minutes 5 c.cm. of well-diluted serum were injected, followed by another interval; then 10 c.cm. of diluted serum were run in. If no untoward symptoms occurred after these tentative doses the undiluted serum was then injected slowly. In using this method, recommended by Cruveilhier,[12] no anaphylactic phenomena have been observed. In one case in which the serum had not been diluted symptoms of anaphylaxis occurred during the administration. The symptoms rapidly subsided three minutes after the subcutaneous injection of 1 c.cm. of pituitrin.

Influence on Temperature and Pulse-rate.

After each injection the temperature fell at least two degrees, and in some cases became normal or subnormal. Concurrently, the pulse-rate and respira-

tion-rate were lowered. As the effect of the previous injection began to wear off the pulse-rate increased, followed by a rise in temperature. Another injection of serum again caused the temperature and pulse-rate to fall. An increasing pulse-rate was taken as an indication that more serum was needed. After the temperature and pulse-rate became normal no more serum was given. In two cases admitted on the second day of the illness an intravenous injection of 100 c.cm. in each case caused an instantaneous drop in the temperature with no secondary rises (see Chart 1). No more serum was required, as the attack appeared to be definitely aborted. Both were definite cases of pneumonia with typical pulse, temperature, respiration ratios, rusty sputum, and the physical signs of commencing consolidation in the lungs. One had well-marked herpes labialis. In these two cases the signs of complete consolidation did not develop. In order to determine whether the fall in temperature was due to the bulk of serum injected one patient was given similar large quantities of horse serum. After each injection the temperature fell about 0·5° but rose again later, and there was no fall in the pulse-rate. As stated above, this patient subsequently developed empyema (see Chart 2).

CHART 1.



L. W., male, aged 24. Acute lobar pneumonia. Intravenous serum, 100 c.cm. on second day of illness.

The usual "plateau" type of temperature chart was not seen in the cases of pneumonia treated with serum. An early crisis was usual when large quantities of serum were given at the outset, and with smaller doses a "staircase" descent resulted, each fall corresponding to an injection of serum (see Chart 3). The phenomenon, noted by Lassance,[13] of an "inverse" temperature (the evening reading being lower than the morning temperature) was observed in only one case.

Influence on Physical Signs.

In two cases, as previously stated, where the disease was aborted by large doses of serum on the second day of the illness, the signs of progressive consolidation did not develop. In the cases where the serum treatment was commenced on or after the fourth day of the illness, however, the signs developed in the usual way.

Serum Reactions.

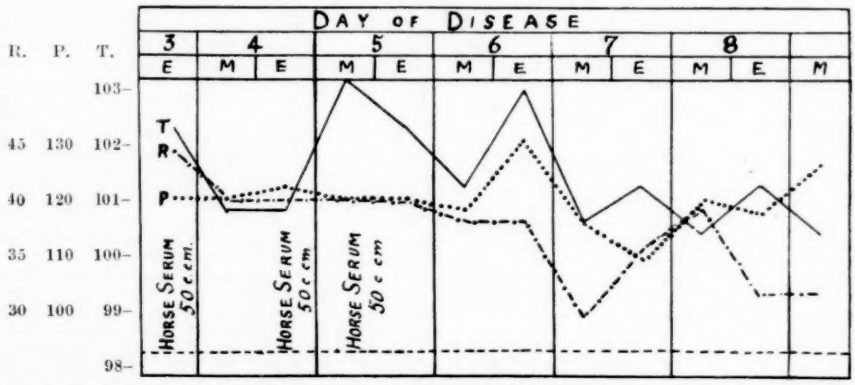
In all patients who recovered a serum reaction appeared, sometimes on the eighth day, more usually on the tenth day after the first administration of serum. In one case it appeared on the sixteenth day, and in another there were two reactions, one on the sixth day and the other on the nineteenth day. The reaction usually consisted of an urticarial rash appearing on the flexor surfaces of the arms and legs, on the chest and abdomen, and occasionally on the face. Joint pains, together with slight rises of temperature, were associated with the urticaria in several instances. Slight hæmorrhage from the bowel, apparently due to an urticarial lesion of the mucous membrane, occurred in one case. The duration of the reactions, modified by injections of pituitrin, varied from two hours to three days. The intense itching of the skin was controlled by a lotion consisting of ac. carbol. ℥i., lot. calaminæ ℥vi.

Evidence of Value of Serum Treatment.

It is well known that lobar pneumonia is a disease in which the prognosis at the outset is uncertain and that many cases recover without any active treatment. The evidence, however, of the value of serum treatment of pneumonia is very strong, especially where the causal organism is the Type 1 pneumococcus. Avery, Chickering, Cole, and Dochez [9] note that the mortality from Type 1 pneumonias before they introduced serum treatment was 25 to 30 per cent.; after the introduction of serum treatment it fell to 7·5 per cent. Nichols,[14] working on the Mexican Border, among soldiers found the mortality fall from 39 to 8 per cent. The French observers have noted similar reductions in the case mortality. The fact that the pneumococcus Type 1 is the predominating organism gives a wide range of application to its corresponding serum. The results are better in men than in women, owing probably to the greater incidence in men of Type 1 pneumococcus.

The general impression obtained in treating the comparatively small number of cases in the present series is that the serum is of distinct value. In four

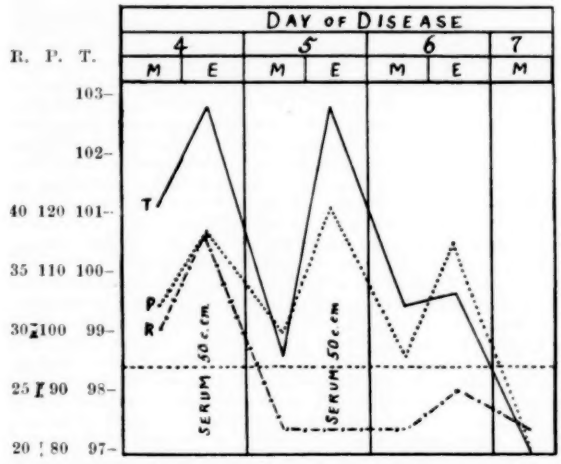
CHART 2.



W. C., male, aged 18. Acute lobar pneumonia (Type 1). Horse serum intravenously, showing slight fall in temperature after injection, without a corresponding fall in pulse-rate. Developed empyema.

desperately ill patients, all admitted before the fourth day of the illness, the effect of the serum was dramatic; one of these cases was complicated by auricular fibrillation but recovered completely. One practically moribund case (not included in the series) of advanced pulmonary tuberculosis complicated by

CHART 3.



T. W., male, aged 48. Acute lobar pneumonia (Type 1). Showing fall of temperature and pulse after each injection of serum.

Type 1 pneumonia recovered from the acute attack of pneumonia after 400 c.cm. of serum had been injected intravenously.

Conclusions.

The following general conclusions have been drawn from the results obtained in this series:—

1. The Type 1 antipneumococcal serum has a beneficial effect on pneumonias caused by other types of pneumococci, but not so marked as the effect on Type 1 pneumonias.

2. The best results are obtained when the serum treatment is instituted early in the disease, preferably before the third day.

3. The initial dose of antipneumococcal serum should be 100 c.cm. injected intravenously with the precautions previously mentioned.

4. Serotherapy seems definitely to diminish the incidence of post-pneumonic empyema; in fact, in the present series no such cases occurred. In the case of Type 1 pneumonia, in which horse serum had been injected as a control, empyema developed.

My thanks are due to Dr. W. J. Hadley and Dr. E. H. Colbeck for their suggestions and advice and for permission to publish these notes, and to Dr. S. Roodhouse Gloyne and Dr. D. S. Page, pathologists to the hospital, for carrying out the laboratory investigations and animal inoculations.

References.

1. Fraenkel, A.: Zeitsch. f. klin. Med., 1886, x., 426.
2. Klemperer, G. and F.: Berl. klin. Woch., 1891, xxxiv., xxxv.
3. Foa, P., and Scabia, E.: Gazz. Med. di Torino, 1892, xliii., 245, 263, 301.
4. Washbourn, J. W.: Brit. Med. Jour., 1897, i., 510.
5. Pane, N.: Centr. f. Bakteriol., 1te Abt., 1897, xxi., 664.
6. Neufeld, F., and Händel, L.: Berl. klin. Woch., 1912, xlix., 680.
7. Truche, C., Cramer, A., and Cotoni, L.: Ann. Inst. Pasteur, June, 1911, 480.
8. Dochez, A. R., and Gillespie, L. J.: Jour. Amer. Med. Assoc., 1913, lxi., 727.
9. Avery, O. T., Chickering, H. T., Cole, R., and Dochez, A. R.: Monograph No. 7, Rockefeller Inst., 1917.
10. Cotoni, L., Truche, C., and Raphael, Mlle. A.: Monographie de l'Institut Pasteur, 1922.
11. Glynn, E. E.: Report to Med. Research Council, No. 79, 1923.
12. Cruveilhier, L.: Ann. Inst. Pasteur, July, 1919, 448.
13. Lassance, V.: Presse Méd., January, 1919.
14. Nichols, H. J.: N.Y. Med. Jour., 1917, cvi., 219.

Reviews and Notices of Books.

MODERN MEDICAL MONOGRAPHS.

Edited by HUGH MACLEAN, M.D. Aberd., D.Sc., M.R.C.P. Lond., Professor of Medicine and Associate Examiner in Medicine, University of London; Director of Clinical Medicine Unit, St. Thomas's Hospital. London: Constable and Co. 1924.

1. *Modern Diagnosis and Treatment of Syphilis, Chancroid, and Gonorrhœa.* By L. W. HARRISON, D.S.O., M.B., Ch.B., M.R.C.P.E., Brevet Colonel, R.A.M.C., Director of the Venereal Diseases Department, St. Thomas's Hospital; Special Medical Officer for Venereal Diseases, Ministry of Health. Pp. 167. 10*s.* 6*d.*

THE modern Medical Monographs Series has for its object to provide the general practitioner with a short and concise up-to-date account of the position of various subjects of medical interest. This object has been very successfully achieved by Colonel Harrison in this book. It gives a lucid and concise account of syphilis, chancroid, and gonorrhœa in all their manifestations, and with the sections on diagnosis and treatment no fault can be found. While Colonel Harrison has refrained from discussing doubtful points and makes it clear that the views put forward are those of his own school of thought, the book gives no dogmatic impression. To the busy practitioner who cannot overtake the modern literature it should be very useful.

2. *Modern Views on the Toxæmias of Pregnancy.* By O. L. V. DE WESSELOW, M.B. Oxon., F.R.C.P., Chemical Pathologist, St. Thomas's Hospital; and J. M. WYATT, M.B. Lond., F.R.C.P., Obstetric Physician in charge of Out-patients at the Hospital. Pp. 99. 7*s.* 6*d.*

THE position taken up by the authors of this volume seems to be substantially as follows. A pregnant woman has albuminuria. If blood and casts are also present in the urine, and she is vomiting, the case is one of "pernicious vomiting," and pregnancy must be terminated. If the albuminuria is accompanied by œdema, the case is either (*a*) "pre-eclampsia," in which case the blood pressure will be high and the nitrogenous constituents of the blood normal, or (*b*) "nephritic toxæmia," which is merely an old nephritis lit up by pregnancy, and hence will show nitrogen retention in the blood and a blood pressure either normal or raised and accompanied by cardiac hypertrophy. Albuminuria without vomiting or œdema is mysterious but unimportant.

If this is not a correct summary of the authors' views we must conclude that it is not easy for a reader of normal intelligence to grasp what they do mean, for we have studied the monograph with the attention due to any work published by Dr. de Wesselow and his colleague. If it is a true summary this monograph fails to fulfil the object outlined by Prof. MacLean, who says in his general introduction: "By reading one of these volumes dealing with a particular problem that interests him, the medical man will know what the present position is." For example, it is misleading to omit to state that there is an important and world-wide body of opinion which holds that the so-called cases of "pernicious" vomiting are nearly all hysterical and are therefore amenable to treatment by suggestion. We feel that the authors are themselves uneasy on this point, for why otherwise do they give full details (pp. 35 and 36) of a scheme of treatment which they then admit to be useless if their diagnosis is correct, and why do they mention urinary changes which have never been considered characteristic of this disease? We feel that it is quite unsafe to label as pre-eclampsia a

group of cases which the authors know will in the majority of instances and under any treatment never exhibit a symptom which an obstetrician of 20 years ago would have classified as eclamptic. It is mischievous, because it encourages obstetricians to publish fantastic statistics purporting to show the results of a "prophylactic" treatment of eclampsia, while it tends to lull into complacency medical men who might otherwise be seeking a remedy for this dreadful complication of pregnancy. And, finally, we hold that, if the group which the authors label "nephritic toxæmia" is, as they believe, "merely the expression of the deleterious effect of pregnancy upon a previously existing renal lesion," they have done a disservice to medicine by endeavouring to introduce a new title for the condition.

The names of many authorities are quoted in the book, but no references and no bibliography are given; it is therefore of little value to the specialist. Mistakes such as the classification of raised blood pressure and urinary changes as symptoms, and the incorrect drawing of the graph on p. 50, are details of minor importance. But our deep appreciation of the valuable contributions to our knowledge concerning the chemistry of the blood which have been made in the past by Dr. de Wesselow make us regret the defects of this monograph.

---

3. *Modern Methods in the Diagnosis and Treatment of Pulmonary Tuberculosis.* By R. C. WINGFIELD, M.B., M.R.C.P., Medical Superintendent, Brompton Hospital Sanatorium, Frimley. Pp. 134. 10*s.* 6*d.*

THIS book, like its companion volumes, does not profess to go deeply into the subject, its main object being to give the general practitioner and senior medical student a summary of the most essential aspects of pulmonary tuberculosis. For this reason we do not find the opsonic index mentioned, which is good, but we also find no word about the rate of sedimentation of the erythrocytes, which is a pity. For, though comparatively new, this simple test is generally recognised by continental workers as an invaluable aid to diagnosis, treatment, and prognosis. It is not a test which every general practitioner will carry out, but it is one about which he should know, if it be only to gauge the competency of the consultant, whose advice he seeks, to give the patient the benefits of the most important among the modern advances in medicine. Some of the author's notes on physical examination show him to be an able and experienced clinician, and the following point is one which is as important as it is rare in text-books. "Pay more attention to the healthy than to the diseased areas of the lung. The older the lesion, the more difficult does the correct interpretation of its physical signs become. But the appearance of these in previously apparently normal lung can be taken as evidence of spread of disease." The Brompton tradition is much in evidence. Mouth temperatures, we are told, are as reliable as rectal temperatures; a quarter of a grain of morphine hypodermically is recommended for hæmoptysis and, when the crisis is past, a heavy dose of bromide. The patient is also to be kept on "strict, absolute rest for the next few days." All of which may have support, but it is diametrically opposed to the teaching of other schools, according to which the chief danger of hæmoptysis, except when the loss of blood itself threatens life, is the stagnation of effused blood in the lungs. It is, of course, impossible in a work on pulmonary tuberculosis to please everyone, or, indeed, to please more than a minority, so widely divergent are opinions on the best diagnostic and therapeutic measures. The author has the courage of his convictions and many years of valuable clinical experience in institutions devoted solely to the tuberculous, and however much his fellow-specialists may differ from him, none can deny his competency to speak with authority.

THE STEINACH OPERATION.

The Theory and Practice of the Steinach Operation. By Dr. PETER SCHMIDT. London: William Heinemann (Medical Books), Ltd. 1924. Pp. 150. 7*s.* 6*d.*

THIS book, as well as containing an account of the experimental work upon which Steinach's operation is based, furnishes a report on 100 cases treated by the author. In these reports he has wisely published all the clinical data at his command, obtained from the whole of the patients operated upon, including cases in which no very definite results were obtained as well as those in which the operation appeared to have been highly beneficial. In Dr. Schmidt's opinion the best site for ligature of the vas is near the point of junction with the epididymis. In this he differs from some other authorities who consider a partial epididymectomy to be a preferable proceeding to a vasotomy. After a survey of the clinical reports published in this book it is difficult to maintain an attitude of incredulity towards the results of the operation of vaso-ligature. Even taking into account the effect of suggestion and the possibility of an improvement in general health due to other factors, the changes effected in some of the author's patients appear to have been so striking that one is almost bound to accept the view that they were the result of the operation. The greatest successes appear to have been gained with what may be described in broad terms as cases of premature old age, either partial or total; but apart from these, even such a condition as arteriosclerosis would appear to have been ameliorated. Where, however, the blood pressure is high the author considers it advisable to bring about a preliminary reduction by means of drugs and then to operate, at first, on one side only. If after a lapse of months this should prove insufficient the opposite vas may be ligated. No harmful results have ever been noted by the author, and as a corroboration of this he quotes the experience of Laughlin, in the United States, who after carrying out 2000 vaso-ligations for sterilisation purposes, states that the operation "can cause no harm of any kind to body or mind."

When discussing the theory on which the operation is based Dr. Schmidt shows himself to be an ardent partisan of Steinach's view that the interstitial cells are responsible for the internal secretion of the testis. In the first chapter of his book he furnishes a general critical survey of the experimental work on which this theory is based and does his best to demolish the views of the opposing school who regard the interstitial cells as trophic. It must be remembered, however, that whether this view of the interstitial cells is or is not correct, the work of Steinach still remains, although in the latter case it will be necessary to modify some of his deductions.

This book is one of the best scientific expositions of the subject available for British readers. The large amount of clinical material that it contains should prove of interest to all who are prepared to adopt an unprejudiced attitude towards its subject-matter.

ELEKTROTHERAPIE.

Second edition. By Dr. JOSEF KOWARSCHIK, Primararzt and Director of the Department for Physiotherapy of the Kaiser-Jubiläums-Spital, Vienna. Berlin: Julius Springer. Pp. 312.

THIS text-book on electro-therapeutics is divided into four parts. The first, which is quite short (11 pages), contains definitions and explanations of certain physical terms and units commonly used in medical electricity. Part II. contains 116 pages and is divided into five sections. These deal with the constant current, alternating currents of low frequency and high frequency, diathermy currents, and the various currents from the static machine. The source, production, measurement, and modes of application of these currents are described in separate sections In the third part (71 pages) the author describes the

effects caused by the passage of these currents through electrolytes and the human body. The theory of ions is explained, and the migration of ions and the movements of colloids and particles in suspension under the influence of the electric current are described. An account is given of the physiological action of the various currents on motor, sensory, and sympathetic nerves, on the central nervous system, on sense organs and the circulation, and on metabolism. The third part concludes with a section on electro-diagnosis. The fourth part (106 pages) deals with disease and its treatment by electrical methods. The general therapeutic properties of the different currents are described in the first section of this part. In the following 11 sections the diseases suitable for electrical treatment are reviewed, each system of the body being considered in a separate section.

The book is a useful introduction to the principles and practice of medical electricity. The author rightly devotes much space to a consideration of the action of electricity on the body in health, for a knowledge of the physiological effects brought about by electrical currents not only enables us to apply electricity intelligently, but also indicates the lines along which investigation can be most hopefully conducted. Dr. Kowarschik discusses the vexed question of the method of action of the galvanic current when used to treat disease of parts lying beyond the range of entry of ions introduced from the exterior. He acknowledges that the current can generate heat in the tissues, but maintains that the heat is too slight to have any therapeutic value. He thinks the power of the current to cause movement of colloidal particles plays some part, not yet known, in the treatment of disease, although these particles cannot be made to migrate through animal membranes. The therapeutic value of the sinusoidal current is not sufficiently emphasised. The author appears to be cautious in the recommendation of these currents, perhaps in view of fatal results which have followed the application in full-length baths in certain parts of Germany. Static electricity is very briefly considered, and the author does not think much of its therapeutic value. It must be mentioned, however, that the machine installed in his department is extremely small.

The work can be recommended. A noteworthy feature is the number of clear and helpful diagrams.

ELEMENTS OF WATER BACTERIOLOGY.

Fourth edition. By S. C. PRESCOTT, Professor of Industrial Microbiology in the Massachusetts Institute of Technology; and C-E. A. WINSLOW, Professor of Public Health in the Yale School of Medicine. London: Chapman and Hall; New York: John Wiley and Sons, Inc. 1924. Pp. 211. 11*s.* 6*d.*

THIS sound and admirably balanced monograph on Water Bacteriology is now in its twentieth year and, for the present edition, has been largely rewritten. In spite of its long enduring popularity the book is still of a size not beyond the compass of the D.P.H. student, and not too bulky to give the beginner in water examinations an excellent review of the whole subject within a reasonable space of time. A certain number of errors have crept into this edition. For example, Houston's table, quoted on p. 19, lacks column headings, and is, in its present form, absolutely meaningless, and the table on p. 36 is out of place and should be between pages 26 and 27 to which it has reference. The characters of the organisms of the typhoid-colon group, as stated on p. 56, are somewhat inaccurate; *B. lactis aerogenes*, *B. acidi lactici*, and *B. dysenteriæ* (Flexner) all being shown as fermenting dulcitol, which none of them do, and *B. dysenteriæ* (Shiga) being shown as turning milk alkaline, which is a property of an allied and often confused organism which Andrewes has called *B. ambiguus*. In connexion with the differentiation of the coli and aerogenes groups by sugar reactions, the methyl-red and the carbinol tests, there are several contradictions on pp. 57–59. It is a pity that such inaccuracies have been permitted to occur, since the book is one likely to be read as a dogmatic guidance to salvation by the beginner in water bacteriology, rather than as a contribution to the subject from authors of great experience for those whose life's occupation lies in this type of work. But the beginner should read it with much profit, if he carries away with him nothing more than the recognition that "In sanitary water examination . . . the factors involved are so complex, and the evidence necessarily so indirect, that the process of reasoning much more resembles a doctor's diagnosis than an engineering test."

ANNALS OF MEDICAL HISTORY.

Vol. VI. No. 2. June, 1924. Philadelphia: Paul B. Hoeber. $2.50.

THE principal articles in this number are biographical—namely, papers upon Sir William Bowman, Carl Weigert, Spallanzani, and Sir William Buttes, who was physician to Henry VIII. We think that the author of this paper, Dr. T. N. Toomey, is in error when he translates the commencement of Henry VIII.'s grant to Buttes by the words, "King by all, &c.," for though he only gives the two first words of the preamble—namely, "Rex omnibus, &c.," the beginning was probably "Rex omnibus ad quos presentes litere pervenerint. . . ." Also, in the last line of Buttes's epitaph Dr. Toomey transcribes "Mors mihi nunc lucum vitaque Christus erit," and translates, "Now that I am dead, Christ will be to me refreshment and life"; it is surely obvious that "lucum" should read "lucrum," and equally obvious that the line is simply a poetical rendering of St. Paul's remark (Phil. i. 21) as given in the Vulgate, "Mihi enim vivere Christus est, et mori lucrum." Apart from these little oversights the paper is good, and Dr. Toomey has been at much trouble to consult original sources of information. Dr. Francis Packard, the editor, gives his readers an interesting paper upon References to Venereal Diseases, in which, with the art of a practised writer, he arrests attention at the outset by a quotation which has nothing to do with syphilis. The best paper in the number, however, is that by Dr. John Ruhrah, entitled James Atkinson and his Medical Bibliography, a scarce and amusing book and a great favourite of Osler. We share Dr. Ruhrah's wonder that it has never been reprinted, but are sincerely grateful to him for having given us a generous number of quotations from it. Bibliography pure and simple is an arid form of literature; as annotated by such men as Atkinson it is most stimulating.

BRITISH WINES AND CORDIALS.

THE Ministry of Health has recently published No. 24 of its "Reports on Public Health and Medical Subjects" (1*s.* 6*d.*), dealing with the composition of commoner British wines and cordials (alcoholic and non-alcoholic). Dr. G. C. Hancock, one of the Ministry's medical officers, is responsible for Part I., which deals with the historical and technical side of the industry, while the much larger Part II., contributed by the Government Chemist, consists of a classified summary of the results of the analyses of some 360 samples. The composition of these beverages formed the subject of a special inquiry by the Local Government Board, which was begun in 1913, but owing to interruption by the war it has only just been completed.

Many of these beverages, although not specifically described as temperance drinks, are not uncommonly regarded as such, and, roughly speaking, they may be divided into two classes—namely, those which contain alcohol and those which really are temperance drinks. Strictly speaking, the term "wine" should be applied only to the former, since wine in its broadest sense

is the fermented expressed juice of any fruit, though the term is generally understood to apply to the juice of the grape. The term "British wine" has, however, been applied to a number of beverages manufactured in the British Isles, some of which contain alcohol produced in part by the fermentation of fresh and dried fruits, whilst others consist for the most part of sugar solutions flavoured with fruit juices, fruit essences, and other flavouring agents, and contain no alcohol or only an amount not exceeding 2 per cent. of proof spirit, as permitted by the Excise authorities. Fermented wines are usually sold without any special indication that they contain alcohol, but temperance drinks are almost invariably described as "non-alcoholic," "non-excisable," or "unfermented." The yearly consumption of British wines and cordials is difficult to estimate. The annual output of fermented British wines probably does not exceed 2 million gallons. The manufacturers of these wines, with few exceptions, use preservatives in some form, those most commonly used in fermented beverages being sulphurous acid and sulphites. Salicylic acid, although the most favoured preservative for temperance wines and cordials, does not appear to be extensively used in alcoholic beverages. For the sake of convenience, the preservatives and alcoholic content of both unfermented and fermented wines have been tabulated, and the analyses are shown in the following table :—

—	Samples of—	
	Fermented British wines.	British unfermented wines and cordials.
Preservatives ..	Nearly all contained some.	Very commonly added; salicylic or sulphites either alone or together are the most general. Neither beta-naphthol nor formaldehyde found.
Sulphurous acid and sulphites.	14% contained over 1·8 gr. per pint. 18·6% contained 0·9 to 1·8 gr. per pint. Maximum (orange wine) 3·78 gr.	Present in traces in nearly all. In 29 samples it exceeded 0·9 gr. per pint; in 5, 1·8 gr. Maximum 3·52 gr. per pint.
Salicylic acid ..	Not extensively used; 10% contained amounts varying from 0·25 to 1·57 gr. per pint.	50% contained from a trace to 11·9 gr. per pint.
Boric acid ..	5% contained from 1·38 to 2·98 gr. per pint.	Present in 18 samples, ranging from 1 to 14·3 gr. per pint, and in all but 4 cases in addition to salicylic or sulphurous acids.
Benzoic acid ..	—	Found in 2 samples: 4·7 and 10·6 gr. per pint.
Proof spirit ..	May contain from 14·8 to 28%. Ginger wine from 10·9 to 27%.	Usually under 2%, but 2 samples contained 23%, though marked "non-alcoholic."
Saccharin ..	—	Found in 10 out of 44 samples of wine, and in 7 out of 98 samples of cordials. The amounts ranged from a trace to 4·6 gr. per pint.

Alcohol, either in the form of grain or wine spirit, is an ingredient occasionally added to fermented wines, but its use for the most part appears to be limited to certain manufacturers of ginger wine who export to the British colonies. British fermented wines may contain from 20–28 per cent. of proof spirit and therefore do not need to be fortified. Of the vegetable acids, tartaric and citric are sometimes added, usually before fermentation or in the preparation of the syrup.

Unfermented British wines are sold under similar names to those given to fermented wines but in larger variety. They are manufactured in much the same way and contain similar ingredients, the chief difference between a wine and a cordial being the density of the syrup which forms the basis of both; in the case of wines, the syrup usually contains from 1·5 to 3 lb. of sugar to the gallon, while in cordials it runs from 3 to 6 lb. to the gallon.

In addition to its sweetening power, some manufacturers are aware of the antiseptic value of saccharin, and, since for equal sweetening power, this substance is in normal times about half the price of sugar, advantage in a commercial sense is effected by its use. The use of artificial colouring matter is practised to a greater degree in the colouring of temperance drinks than in the colouring of alcoholic drinks, and 30 per cent. of the samples analysed by the Government chemist were found to contain coal-tar (aniline dyes) in very minute amounts. As regards the use of saccharin, it should, of course, be remembered that this substance has no relation chemically to sugar and is not a food, and its use in food is prohibited in the United States save in respect of certain drugs and classified foods containing this substance which may be required for the mitigation or cure of disease (Food Decision No. 142, United States Department of Agriculture). Its use in British wines and cordials has been shown to be limited for the most part to some of the non-alcoholic wines and cordials. This statement does not apply to the manufacture of sweet mineral waters in which saccharin appears to be much more commonly employed. Most manufacturers are, however, able to do without saccharin, and it is clearly not necessary in the preparation of these beverages. An expert American committee who reported on the use of saccharin summarised their conclusions as follows: (1) Saccharin in small quantities (4·6 gr. per day or less) added to food is without deleterious or poisonous action, (2) in larger quantities (over 4·6 gr. per day and especially above 15·5 gr. daily) if taken for considerable periods of time, especially after months, is liable to induce disturbances of digestion.

Coming now to the use of salicylic acid, which is the most commonly employed preserving agent in temperance drinks, the author states it is a powerful drug, and, like sulphurous acid, has the quality of inhibiting especially the growth of moulds and those organisms which cause fermentation in fruit preparations. Williams and Starling have found that it retards gastric digestion but has practically no effect on pancreatic juices; on the heart it exercises a depressing effect. Within recent years feeding experiments with this preservative on human beings have been conducted by the U.S. Bureau of Chemistry (Bulletin No. 84, Part 2, 758–9). The conclusions which were drawn from the study of the clinical and medical history of the men under observation are summarised as follows :—

"The final conclusion in this matter is that the unenviable position which salicylic acid has heretofore held among preservatives, in being regarded as the most injurious of all, is to a certain extent undeserved. Like other ordinary preservatives, it is not one which can be classed as a poison in the usual sense of the word. When used as a medicine in many cases of derangement of health it is, like the other chemical preservatives, often highly beneficial when properly prescribed by a competent physician. It is when used in the food at first an apparent stimulant, increasing the absorption and solubility of the common food elements from the alimentary canal. It soon, however, loses its stimulating properties and becomes a depressant, tending to break down the tissues of the body more rapidly than they are built up. It disturbs the metabolic processes, in most cases producing conditions which are not normal and which, apparently, are not beneficial. It has a tendency to diminish the weight of the body and to produce a feeling of discomfort and 'malaise,' which, while not marked, is distinctly indicative of injury. In some cases these symptoms of 'malaise' approach illness, and, while not always diagnostic, are sufficiently common to point unmistakably to the salicylic acid as their origin. It places upon the excretory organs, especially the kidneys, an additional burden which they are not able to bear, and which cannot possibly result in any good, but, on the contrary, must necessarily finally result in injury, though perhaps with the use of very small quantities of the preservative these organs would continue to perform their function for many years before finally breaking down."

The Departmental Committee, appointed in 1899 to inquire into the use of preservatives and colouring

matters in food, recommended that the quantity of salicylic acid permissible in liquids should not exceed 1 gr. per pint. Of the temperance wines and cordials examined by the Government Chemist 50 per cent. contained salicylic acid. The table below shows the number of samples which exceeded the 1 gr. limit recommended by the Departmental Committee.

Salicylic acid.	No. of samples.
Exceeding 1 gr. but not exceeding 3 gr. ..	28
,, 3 gr. ,, ,, 7 gr. ..	21
,, 7 gr. ,, ,, 12 gr. ..	9
Total	58

As the question of preservatives and colouring matters in foods is again under consideration by a Departmental Committee appointed by the Minister, Dr. Hancock states that he has refrained from making any specific recommendations in the matter.

The Conduct of Medical Practice.

A Series of Articles by Experts dealing with the Difficulties Encountered in Professional Life and How to Meet Them.

XVIII.—LIBEL AND SLANDER.

By HUGH WOODS, M.D.,
GENERAL SECRETARY, LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.

"Where it concerns himself, who's angry at a slander makes it true."—BEN JONSON, *Catiline*, Act III., Scene i.

EVERY medical practitioner ought to have a sound elementary knowledge of the law of libel and slander, for not only is he, by the nature of his profession, much exposed to libel and slander and very liable to serious damage from them, but he also runs serious risk, in the course of his professional duties, of himself libelling or slandering others, or of giving opportunities for accusations and claims for damages against him on the ground of alleged libel or slander. Before discussing the subject in its special reference to medical practice, I will therefore briefly set out a few elementary principles with which every practitioner ought to be familiar.

Elementary Principles.

Defamatory Words.—Words which produce, in any given case, appreciable injury to the reputation of another are called defamatory, and defamatory words, if false, are actionable. False defamatory words, if written and published, constitute a libel; if spoken, a slander. False words which by their nature evidently must damage the reputation are actionable without proof that any particular damage has followed, otherwise it must be proved that some appreciable injury has in fact followed from the words spoken or written. Such evidence of "special damage" is not required when the words complained of were spoken of the plaintiff in the way of his profession or trade or an office of public trust, as it is assumed that disparaging words will under these circumstances cause injury even if specific instances of damage are not in evidence. In order to judge whether certain words are defamatory or not it must be considered whether the nature of the words is such that it must be presumed that they would seriously injure the reputation of the person referred to as being disparaging or tending to bring into ridicule and contempt, when written; or when spoken, as charging with the commission of a crime, with having a contagious disorder, with unchastity or adultery in the case of a woman, or as disparaging the person in his or her trade or profession. When it cannot be presumed that the words must cause appreciable injury it is necessary to prove that they have in fact produced injury to the patient's reputation. The presumption that words are defamatory arises much more readily in cases of libel than in cases of slander, since for several reasons they are more likely to cause injury when written than when merely spoken.

Malice.—It is not necessary to prove that there was any wrong intention or motive in the use of defamatory words unless the words are privileged by reason of the occasion on which they were employed. Words, if false and defamatory, are actionable (when not privileged) even though published with an honest belief in their truth or accidentally or inadvertently. Absence of malice may, however, be pleaded in mitigation of damages. When the judge has ruled that the occasion was privileged in an action for defamation, the plaintiff has to prove malice. The question whether there was malice or not is for the jury, unless the judge rules that there is no evidence of malice to go to the jury. Malice in law is any indirect motive other than a sense of duty, and not only feeling against the plaintiff. If malice is proved, the privilege attaching to the occasion, unless it be absolute, is lost. The fact that the defendant at the time of the publication of the defamatory words knew that they were false is clear evidence of malice, but even if the defendant honestly believed in the truth of what he said, and was acting under a sense of duty on a privileged occasion, still the words used and the manner and mode of their publication may afford evidence of malice. Where the language used is much too violent for the occasion and circumstances to which it is applied, or utterly beyond and disproportionate to the facts, or where improper motives are unnecessarily imputed, there is evidence of malice to go to the jury.

Privileged Occasions.—An occasion is privileged when the circumstances under which defamatory words were written, or spoken, were such as to make it right that the writer or speaker should honestly state what he honestly believes of the character of another, and to speak his mind fully and freely about him. Privileged occasions are of two kinds: those absolutely privileged, and those in which the privilege is qualified. Privilege is absolute in the case of words spoken by a judge on the bench, by a witness in the witness-box, words spoken in Parliament, &c., and even if the words were spoken falsely, knowingly, and with express malice, they are not actionable. Where the interests of the public do not demand that the speaker should be freed from all responsibility, the privilege is qualified, and not absolute, and damages can be recovered in spite of privilege if it can be proved that the words were not used in good faith, but that the privileged occasion was made use of for the purpose of wilfully and knowingly defaming another. It is for the judge alone to decide whether or not a communication is, or is not, privileged by reason of the occasion. If the occasion is absolutely privileged judgment will at once be given for the defendant. If the judge decides that the occasion is one of qualified privilege only, and the plaintiff puts forward any evidence of malice sufficient to go to the jury, it is then a question for the jury whether or not the defendant was actuated by malicious motives in writing or speaking the defamatory words, and if the jury find that he was so actuated the protection of privilege is lost.

Publication.—Publication is the communication of the defamatory words to some person or persons other than the person defamed. In civil proceedings communication of the words to the person defamed only is not publication. It cannot damage his reputation. When the words are such as obviously would provoke to a breach of the peace, criminal proceedings can be successfully taken when they are communicated only to the person defamed, provided the words are written and not merely spoken. Criminal proceedings cannot be taken for slander.

Justification.—It is a complete defence to any action for libel or slander if the truth of the defamatory words, on which the action is founded, is proved. In a criminal trial for libel this defence is not sufficient. The defendant must, however, prove that the words

used were true in substance and in fact, and not merely that they were partly true. The onus of proving that the defamatory words were true rests on the defendant, and, failing such proof, they are assumed to be false. If the jury find that the words were true in substance and in fact they must find for the defendant, even though the words were used maliciously; if they find that the words were false they must find for the plaintiff, even though the defendant in their opinion honestly and reasonably believed that the words were true when he uttered them.

Medical Practitioner as Plaintiff.

To have and to maintain good reputation is a matter of very serious concern to medical practitioners, and they ought to give thoughtful and careful attention to the best means of protecting it against those who wantonly or wickedly seek to detract from it. Doctors are a frequent subject of gossip, but, when it tends to damage them, they should remember that it is not always defamatory, and that they often derive substantial benefit from it. Ordinary foolish gossip should be altogether ignored, even though it be irritating and unfair, since by dealing with it seriously as a slander, wide publicity may be given to it, and people may even be led to infer that it is founded on some substantial basis when it is nothing more than mere irresponsible chatter.

Spiteful persons frequently write letters to medical practitioners accusing them of incompetence, malpraxis, negligence, or unprofessional conduct, when they are annoyed by being pressed for payment of fees due for medical attendance, by refusal of untrue certificates in support of unjustified claims, by reprimands for recklessly giving unnecessary trouble, or by the expression of opinions with which they disagree or which are distasteful to them. A medical practitioner, on receipt of such a letter, sometimes answers angrily, demanding withdrawal and apology, with threats of legal proceedings. As there has been no publication of the libel, the writer can safely, and often does, reply reiterating his accusations and adding to them. When the practitioner proceeds to carry out his threats he learns to his disgust that he has no grounds for action, and that he has simply given the writer the gratification of knowing that his words have caused the annoyance they were intended to cause. Such letters should either be treated with silent contempt, or the writer should be told that his accusations are unfounded and that any publication of them to others will be appropriately dealt with. When letters of the kind are written by relatives of deceased patients, distressed by their loss, and unreasonably blaming the doctor for his lack of success in his treatment, they should be answered firmly but sympathetically, and the unreasonableness of the accusations should be explained in a kindly spirit. In this way honest but foolish fancies can often be quite satisfactorily dispelled.

Medical practitioners should, if possible, avoid bringing actions for libel or slander. They often give world-wide publicity to false charges which would not otherwise have reached more than very few, and would have received little credence. It is very unwise to bring such actions when there is risk of failure owing to technical difficulties, apart from the truth or falsehood of the defamatory statements. People will often overlook the real reasons for the failure of an action, and regard it as a justification of the libel or slander complained of. The occasions on which doctors are libelled or slandered are very frequently more or less privileged, and proof of legal malice presents many pitfalls. Practitioners who are medical officers to public bodies, or panel doctors, are very liable to false charges made to the authorities whose duty it is to investigate such charges, and in these cases there is seldom clear enough evidence of malice to deprive the complainant of the protection of privilege. Members of boards of guardians, of local councils, &c., often make slanderous statements about medical officers, which are reported in newspapers. The slanderers, and the newspapers giving a correct report of their remarks, can plead privilege, but a newspaper which publishes the defamatory statements must, if requested, publish a denial of the defamatory statements, or it will render itself responsible for them. Such public contradiction is often the only remedy open to the practitioner who has been unjustly accused.

When a really grave libel on a medical practitioner is openly published it should be promptly dealt with, and failing an unreserved withdrawal and apology with publicity equal to that of the libel, legal proceedings should be taken, and full public vindication established. Unfortunately, the originators of intolerable libels or slanders are, more often than not, impecunious, and careless what damages may be awarded against them because the plaintiff cannot take from them what they do not possess. In such cases it may nevertheless be necessary to take legal proceedings so as to obtain an injunction restraining the defendant from continuing to publish the libels or slanders, and a disregard of the injunction can then be punished by imprisonment. Occasionally a medical practitioner receives a letter which constitutes a criminal libel although not published to others than himself—for instance, one accusing him falsely of criminally inducing abortion. In such a case he should not shrink from prosecuting, bearing in mind that an unfavourable construction might be put upon his inaction if subsequently he should be prosecuted for the alleged offence.

Medical Practitioner as Defendant.

A statement that a person is suffering from disease is often defamatory, and as the most talented practitioner is liable to error in diagnosis it may be false. The result of a statement by a doctor that a patient is suffering from tuberculosis or cancer may lead to his being dismissed from his employment if made to a third person, and the doctor may be liable for the damage resulting to the patient. Medical certificates should therefore be given to the patient himself and not to an employer, or friendly society, without the express authority of the patient. To talk about the ailments of patients to others is, of course, wrong and dangerous, and should be strictly avoided. Even though the protection of privilege may be available in the case of medical certificates or reports to employers or friendly societies, or the like, there is still a certain amount of risk which it is discreet to avoid. If the truth of the statements made can be proved no damages can be recovered, but legal proof that a person is suffering from a particular disease is often extremely difficult, even when the diagnosis is in fact quite accurate. When there is a statutory duty to report that a patient is suffering from an infectious or other disease, it is sufficient to prove that proper care was taken in arriving at a diagnosis and that it was honestly stated according to the best of the practitioner's knowledge and belief. When a doctor violates the recognised rule of professional secrecy, and fails to prove the truth of damaging statements made by him about a patient, vindictive damages are not unlikely to be awarded against him.

Libel or slander of a fellow practitioner is suspected much more often than it occurs, but it is unfortunately not unknown. Alleged slander of doctors by doctors usually turns out on inquiry to have arisen from false reports by patients of what has been said to them, or sometimes from deliberately false statements by them. When a medical practitioner disagrees with the advice or treatment of another, he should weigh his words carefully, and not attribute ignorance, incompetence, or malpraxis to a doctor who has honestly formed a different opinion, even if he has been quite wrong in his views or his treatment. It may be his duty to express definite disapproval of the advice or treatment given, but, without clear proof, he ought not to attribute negligence, want of skill, or wrong doing to a patient's previous medical adviser, and still less to make unfair or captious criticisms.

THE LANCET.

LONDON: SATURDAY, OCTOBER 4, 1924.

THE PRINCIPLES OF SUCCESS IN MEDICINE.

DURING the past week addresses have been delivered at the opening of the winter session in many of the London schools of medicine. The introductory habit appears to be nearly confined to London, for most of the large provincial schools plunge straight into their work without beginning to commence, and the stimulating address is not appropriate to North Britain, where the temperament of the medical student needs no stimulus in order to count on success. The addresses have in some cases been delivered by past members of the school whose success in one of the manifold fields of medical endeavour is rightly used as a spur to those just starting on their course. In other cases the school has invited an outsider whom wide experience has entitled to speak worthily on medical aims. All the addresses which we reproduce in abridged form in this issue of THE LANCET put into other words the message of the Apostle to the Gentiles, to keep in mind whatever is true, whatever is worthy, whatever is just, whatever is pure, whatever is attractive: advice which contains the germ of psychotherapy no doubt prompted by the medical companion of his journeyings. Success, in the mouths of the several speakers, implied many different things; personal and professional in the first instance, overflowing into communal and social channels and even affecting the welfare of the race. Sir ISAMBARD OWEN exhorted his hearers to work for a real science of therapeutics based upon exact observation, an aim in the pursuit of which he had given some of the busiest years of his life. Dr. CHARLES PORTER'S message to his hearers is epitomised in the transposition of a word in the title of his address; asked to speak on "Some Aspects of Preventive Medicine" he chose to speak on "Some Preventive Aspects of Medicine," in order to impress on his hearers the view that preventive medicine is not a subject for specialists, but for every man and woman entering upon the practice of medicine. His address might have been directed to refute Mr. BELLOC'S gibe at hygiene in our happier age—"for now we know both how to make them sick and keep them so." Sir HUMPHRY ROLLESTON, in handing awards to prize-winners, was careful to point out how the student who matures slowly may eventually excel his prize-winning contemporary of hospital days. Some ambition and much patience would go far to supplement the moderate degree of ability required for those who set out to attempt consulting practice. Mr. H. J. WARING spoke of the organisation of medical practice, giving as his conviction that under a proper grouping it would be right and possible to hand over to the medical profession the whole responsibility for the health of the people. The medical man, he was satisfied, could play a larger part than he was now playing in public affairs, imperial and local. Sir DAVID FERRIER, whose brilliant deductions were largely responsible for opening the sealed book of brain localisation, nevertheless pleaded that with all the increased diagnostic facilities with which scientific method had now endowed us, there should be no atrophy of the trained faculty of the skilled practitioner, no disuse of the unaided tactus eruditus. The factor of success surpassing all others in importance is, as he expressed it, a thorough knowledge of work, and all those who have followed the steps by which the speaker attained to certainty will admit his right to speak on this theme. To those who may be inclined to doubt whether the special direction of medicine that interests them is likely to bring success in its train we commend a consideration of the letter in our correspondence columns signed by one who conceals over an unjust pseudonym much experience in the Services. Two now famous directors-general started their careers as bacteriologists, and it is impossible to forecast from what branch of medical study will be chosen the administrator of 30 years hence. The message of other opening addresses not noticed in this brief summary was addressed to the needs and interests of the particular student rather than to a wider circle, but we must not overlook the remark of the Dean of the Middlesex Hospital in speaking of the great part played by that hospital in bringing home to the people of London the importance of the scientific side of medical work. At the London School of Medicine for Women the Dean's address was of a domestic character in view of the jubilee celebration to take place towards the end of the present month.

HEALTH LEGISLATION IN PROSPECT AND RETROSPECT.

NEITHER the present short session nor the coming autumn session of Parliament, likely to be occupied with high affairs of State, may be able to devote much attention to health measures, but there are several Bills on these domestic topics sufficiently mature to be ready to pass into law. The House of Lords has already approved the Therapeutic Substances Bill for regulating the manufacture, sale, and importation of vaccines, sera, and other substances, including salvarsan and insulin. The House of Commons has passed the Public Health (Scotland) Amendment Bill to allow local authorities to assist persons who could not otherwise afford it to obtain insulin treatment. Other Government Bills in the list are the Factories Bill and the Lead Paint (Protection against Poisoning) Bill, both prepared by the Home Office, the Board of Trade's Bill as to sale of bread, and the Mines Department's Coal Mines (Washing and Drying Accommodation) Bill. Of these the Factories Bill is believed to have the best chance. Part of it is mere consolidation of existing law, part is extension and amendment. There is a good deal of confusion to be cleared up in factory and workshop legislation. Last March an Order was made as to first-aid equipment at quarries and pit-banks. It was an excellent Order, but its statutory origin was obscure. Those who were curious to track down the statutory authority for the Order found it hidden in a Workmen's Compensation Act; and those who wondered why that particular provision applied to quarries found the reason in the legal definition of a quarry as a "non-textile factory." All these distinctions between a textile and a non-textile factory and between a factory and a workshop will be removed if the new Bill becomes law. Various matters at present covered piecemeal by Welfare Orders and Departmental Regulations will be dealt with comprehensively by statute. Another proposed change is to hand over to factory inspectors (in place of local sanitary authorities) the enforcement of provisions

relating to cleanliness, overcrowding, ventilation, and sanitary conditions.

When the two Houses rose in August the chief achievement of the year in health legislation was the alteration of the law of workmen's compensation in respect of silicosis. The National Health Insurance (Cost of Medical Benefit) Act closed a controversy in which the approved societies had taken a vigorous part. The consolidating National Health Insurance Act is a boon to all concerned. Its 150 pages contain in a single and well-constructed code the whole of the permanent law, and it is understood that corresponding codes of national health insurance regulations will be issued at the end of the year when the Act takes effect. The consolidating Bills relating to housing and town planning have yet to receive the Royal Assent. Many other measures directly or indirectly concerned with health and social welfare have had their careers checked. The Bills as to adoption of children, guardianship of infants, and legitimacy are examples. Colonel FREMANTLE's useful Births and Deaths Registration Bill is not yet law. Lieut.-Commander KENWORTHY's Dogs' Protection Bill (to restrict vivisection) had its counterpart in the House of Lords, where Lord BANBURY of Southam was once more heard upon a topic he has made his own. Lord BANBURY's Bill was successfully opposed by Lord KNUTSFORD in a debate in which the Lord Chancellor declared that the Government considered the Bill would put an end to essential research, and Lord PARMOOR reported the unanimous opinion of the Medical Research Council to the same effect. One Bill which has not yet had as much consideration as it deserves is the Smoke Abatement Bill, which the House of Lords briefly discussed last July. A House of Commons measure for which much might have been said was Mr. WELLS's Public Health Acts (Amendment) Bill "to incorporate in one Act certain provisions relating to public health and local government contained in local Acts." To bring all local authorities into line with the most advanced municipalities in health matters is a most laudable ambition. Unfortunately, in the present congestion of Parliamentary time, health standards, in so far as they can be advanced by legislation, make better progress by local than by public Act.

THE AFTER-HISTORY OF BREAST-CANCER OPERATIONS.

THE gradual evolution and perfection of surgical therapy in general has accustomed us to expect a high percentage of cures in most diseases where such treatment is undertaken, but there must be one reservation in making such a statement. In malignant disease an equally high proportion of permanently good results can by no means be claimed in spite of the vast amount of care, thought, and effort which has been expended upon the elaboration of technique devised to eradicate it. The natural disappointment which has followed the failure of sustained attempts to ensure the same measure of success in cancer operations as is obtained in other departments of surgery has expressed itself of late in a certain pessimism to be discerned in the writings of surgeons engaged in the treatment of the various manifestations of this malady. There has grown up an atmosphere of diffidence and uncertainty as to the propriety of performing some operations which have been regarded until lately as essential proceedings if cure is to be obtained, a questioning of the advisability of attempting to expel the disease by such extensive removals as have been in vogue. In the case of cancer of the breast there has arisen a vague feeling, scarcely amounting to a definite opinion, that the end-results of modern operations have not been commensurate with the alterations and supposed betterment of technique employed. It is easily understood why such contentions should be put forward. Every surgeon is aware of a number of recurrences which have taken place in his own practice after what have appeared to be most satisfactory procedures in the light of present-day surgical knowledge. The general practitioner can tell of early cases where, in spite of a thorough local removal, the patient has succumbed subsequently to secondary growths in other parts of the body. These tragic results, where large operations have failed to avert the fatal issue, make deep and lasting impressions upon the practitioner's or surgeon's mind. They call forth doubts about previously unquestioned beliefs in the advisability of and necessity for the modern extensive operative procedures. In these circumstances, the inquiry into cancer of the breast, initiated by the Departmental Committee on Cancer of the Ministry of Health, is of very considerable value. The investigation was carried out by Dr. JANET E. LANE-CLAYPON. The literature of the last 50 or 60 years from nearly all European countries and from America has been laboriously submitted to modern statistical methods of research. Never before has such a comprehensive review of this subject been undertaken, and the care which has been bestowed to avoid errors in making deductions from the enormous amount of material at the disposal of the author invest the results arrived at with an exceptional degree of reliability. In all, the case reports of 25,410 patients came under consideration, and of these just under 20,000 were available for the study of end-results. The report is arranged under three separate sections, which deal with the operation and its results, the clinical condition of the patient, and the ætiology.

The question whether the "complete" operation gives better results than those claimed by the older surgeons who practised the "incomplete" method appears to be settled in the affirmative. All the statistics, even when critically analysed, seem to show that more patients survive any given point of time after operation when it has been of the modern "complete" type. Nor does there appear to be any ground for thinking that cancer cells are disseminated more easily by the bigger operation. It is admitted that, in spite of surgical treatment, a deplorably large percentage of operated patients subsequently die of metastases. Have these women gained anything by submitting to operation? Has the time of death been hastened, postponed, or unaffected? It is not easy to reach a decisive answer to these questions for the following reasons. Unfortunately for Dr. LANE-CLAYPON, most authors have taken the unduly short period of three years as the crucial interval after operation on which to assess their results, and she has thus been forced to use this period as a basis of calculation of average results. The difficulties of following up cases over a long period of years are great, but since not a few patients survive for three years and yet succumb to recurrence many years later, it would seem worth while for surgeons to extend their basis of calculation to five if not to ten years survival after operation. We understand that the inquiry which is now being made by the Medical Society of London will cover the longer periods of survival. In considering such a problem as the curability of cancer, and the relative values of partial and complete operations, a more severe test

than three years would seem necessary, especially since the average expectation of life after the onset of cancer of the breast, when the disease runs its own course, is estimated at three and a half years. Bearing these limitations in mind, the outcome of Dr. LANE CLAYPON'S inquiry remains of great interest. She concludes that after the complete operation 50 per cent. of patients pass the three-year period, and 33 per cent. will be alive at the end of five years. Making allowances for the natural death-rate of persons at the cancer age and other corrections, the deduction is arrived at that the mean duration of life from the "complete" operation is five years eight months. Now, on the average, patients do not come to operation until one year after they are aware of the onset of the disease. Hence with the complete operation the expectation of life is six years eight months, so that the result of operation is to prolong life by more than three years of actual time. If we turn to patients operated upon in the early and most favourable stages of the disease, the gain is seen to be much greater, for they live on an average ten years longer than the operated cases. With regard to the use of X rays and radium as auxiliary measures to surgery, the author declares that practice has not been sufficiently standardised for data which lend themselves to statistical inquiry to be available.

The whole report is full of interesting facts which emerge from the inquiry. Thus the belief that cancer in young people follows a more malignant course is shown to be erroneous, and numerous other questionable points which have long been in doubt are settled. The active surgeon must feel gratification in the demonstration that, though his results in this disease fall far short of perfection, yet he is the means of prolonging life for considerable periods and certainly ameliorates the unhappy lot of those unfortunate women who inevitably fall victims to the late manifestations of it. It is clearly brought out also that the prognosis is incomparably better when the patients apply early for surgical relief. The hope for improvement in the future lies in this direction rather than in further extension of the operation, which seems to have been pushed to its practical limits.

The Services.

CIVIL CONSULTANTS TO THE ROYAL NAVY.

THE following Civil Consultants to the Royal Navy have been recently appointed by the Admiralty:—Sir Humphry D. Rolleston to be Consulting Physician; Mr. Arthur Edmunds to be Consulting Surgeon; Dr. C. Hubert Bond to be Consultant in Mental and Neurological Diseases.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. R. H. St. B. E. Hughes is placed on the Retd. List with the rank of Surg. Capt.

C. H. Savory (late Tempy. Surg. Lt. R.N.) to be Surg.-Lt.

E. J. K. Weeks to be Surg. Lt.

TERRITORIAL ARMY (R.A.M.C.).

Col. J. Clay, T.D., K.H.S., resigns his commn. and retains the rank of Col. with permission to wear the prescribed uniform.

Lt.-Col. J. M. Gover, from R.A.M.C., T.A., to be Col. and Assistant Director of Medical Services, 50th (Northern) Division, T.A., vice Col. J. Clay.

Capt. W. E. Hodgins resigns his commn. on appt. to the R.A.F.

G. H. R. Gibson (late Canadian Army Medical Corps) to be Capt.

Capt. J. Robertson (late R.A.M.C., S.R.) to be Capt.

Surg. Lt. N. Braithwaite (late Royal Navy) to be Lt.

D. F. Hocker to be Lt. ——

ROYAL AIR FORCE.

Flight Lt. E. D. D. Dickson and Flying Officer J. G. Russell are granted permanent commns.

Annotations.

"Ne quid nimis."

VOLUNTARY BOARDERS IN MENTAL HOSPITALS.

THE story was told many years ago by a medical officer of one of the large mental hospitals in Scotland that one day he was standing at the main entrance of the hospital in the company of a head attendant who had grown grey in the service of the institution. As they were chatting together and looking down the carriage drive, a man carrying a portmanteau was seen to approach. The head attendant, who was rather proud of his clinical sagacity, remarked: "Here comes a new patient, and he must be very bad indeed as he comes by himself." The speaker may have intended his remarks to have been taken as a sample of pawky humour, yet they were no doubt in sympathy with current trained opinion and would be echoed by the ordinary layman at the present time. The average man would say that a patient must be very insane indeed if he were of his own free will to seek admission to a mental hospital. Yet what are the facts? Every year large numbers of voluntary boarders apply for admission, and there are mental hospitals in England and in Scotland where those received in this way actually exceed in number those that are certified. In England voluntary boarders can be received only in registered hospitals and licensed houses. Bethlem Royal Hospital and Holloway Sanatorium are examples of the former, and "licensed house" is but another name for "private asylum." The large mental hospitals managed by committees of county councils or county borough councils are not permitted by law to admit voluntary patients. It is pleasant, however, to be able to record that there are two exceptions to this statement. A special Act of Parliament empowers the Maudsley Hospital, which was built by the generosity of the late Dr. Henry Maudsley and is under the control of the London County Council, to receive voluntary boarders only. Just recently the Royal Assent has been given to the City of London (Various Powers) Act, 1924, under which voluntary boarders can be received at the City of London Mental Hospital, Dartford. By the same statute the words "mental hospital" replace the word "asylum" in the official title of the institution.

SUBOCCIPITAL PUNCTURE IN MENINGITIS.

IN a recent number of the *Münchener Medizinische Wochenschrift* Dr. Adolf Hartwich, assistant in the Medical Clinic of Halle University, reviews the literature and records his experience of suboccipital puncture for removal of fluid from the cisterna magna in meningitis. Apart from 81 occasions on which he has employed the method for diagnosis he has recently used suboccipital puncture with success in two cases of cerebro-spinal fever. The first patient was a girl, aged 12, in whom suboccipital puncture was performed 13 times in the course of 25 days, 20 c.cm. of anti-meningococcus serum being injected on each occasion after removal of 30 c.cm. of cerebro-spinal fluid. The injections were well borne, although the patient complained of headache regularly after each injection. Recovery took place in five weeks. On several occasions lumbar and suboccipital punctures were carried out at the same time, and comparative observations were made of the globulin reactions, the cellular content, and the pressure of the column of cerebro-spinal fluid. Except on one occasion more cells were found in the fluid removed by lumbar than by suboccipital puncture. The globulin reactions were the same in both fluids. The pressure of the cerebro-spinal fluid was, as a rule, higher on suboccipital than on lumbar puncture. In the second case, which occurred in a man aged 22, suboccipital puncture was performed 11 times in the course of three weeks and anti-meningococcus serum, the exact amount of which is not stated, was

injected. Lumbar puncture in this case was very difficult owing to the narrow space between the vertebræ, and only a few c.cm. of turbid fluid could be obtained by aspiration, whereas 20–30 c.cm. were readily withdrawn by suboccipital puncture. Comparative examinations of the fluids obtained by suboccipital and lumbar punctures were made with similar results to those in the first case. Recovery took place in six weeks. No bad effects from suboccipital puncture, nor failures such as "dry taps," or mixture of blood with the cerebro-spinal fluid, were observed in either case. Dr. Hartwich claims that suboccipital puncture causes less discomfort to the patient and is more easily carried out than lumbar puncture. It is of special value in cases in which lumbar puncture yields no result owing to the formation of fibrin clots during the acute stage or of adhesions during the stage of recovery. He also points out that owing to the necessity for repeated punctures, both in meningococcic and tuberculous meningitis, it is important to have more than one site for puncture at one's disposal. Moreover, in otogenic or other local variety of meningitis suboccipital puncture may prevent further spread of infection.

PHOSPHORESCENCE OF FISH AND MEAT.

A SERVICE correspondent writes that he was consulted recently about a smoked haddock brought to him because it was luminous in the dark. Was it fit to eat? Although the streak of luminosity was quite definite there was no unpleasant smell, and as there was nothing else immediately available for breakfast, our correspondent passed it as sound. When cooked the luminosity had completely disappeared and the food gave rise to no unpleasant symptoms. The phenomenon of light production in dead tissues is very interesting; it appears to be due almost exclusively to the presence of photogenic bacteria, a fact which was recognised by Pflüger as long ago as 1875. The first isolation of one of these forms in pure culture was made by Fischer, who described its properties in 1887. Since then there has been a large amount of rather spasmodic and unconnected work expended on these curious species and a good many facts concerning them have become known. In nature they are generally found upon marine products, although also seen occasionally upon butchers' meat. They are also found invading crustacea and small marine metazoa in which they cause the phenomenon of phosphorescence and, not improbably, lead a symbiotic existence; they also appear to be the cause of the phosphorescence sometimes seen at sea. Photo-bacteria are widely distributed over the world's surface and have been found in India, Europe, and Australia. On at least two occasions human subjects have been described as giving off luminous sweat, and it is probable that there has been an invasion of the crypts of the sebaceous and sweat glands by photogenic organisms, pursuing a saprophytic existence on the surface of the body. Phosphorescence of consumable articles does not indicate unfitness for human food. Most of the known species flourish at low temperatures and can live and produce their specific effect at the temperatures employed for the storage of fish and meat at which ordinary putrefactive bacteria are not active. It is stated, indeed, that these organisms perish when active decomposition takes place in the material upon which they are living. They are readily culturable upon ordinary media, and experimental inoculation of animals has proved them to be non-pathogenic. In his monograph[1] on the Nature of Animal Light, Prof. E. N. Harvey, of Princeton, mentions some ways in which luminous bacteria have been made of service to man. Beijerinck has used them for testing the permeability of bacterial filters; Dubois and Molisch have suggested them as an illuminant in powder magazines where any sort of flame would be dangerous. It is certainly possible in emergency to read the time in the dark by the light of a glow-worm, but so far, at any rate, low temperature illumination by living things has not been exploited to any great extent.

[1] Monographs on Experimental Biology. Edited by Loeb, Morgan, and Osterhout. J. B. Lippincott Company.

THE LIMITATION OF HARMFUL DRUGS.

IN view of the forthcoming Second International Conference on Opium, which has been summoned in Geneva for Nov. 17th to consider the best means of suppressing the abuse of morphine, cocaine, and other dangerous drugs, there is a special interest in a recent report of the International Institute of Agriculture in Rome on the question of the substitution of other crops for the opium poppy and the coca leaf. This report is the result of an investigation undertaken by the institute at the request of the League of Nations, and deals with an important side of the problem. It will be the work of the November conference to draw up a convention limiting the world's production and manufacture of harmful drugs to the world's medical and scientific needs. Undoubtedly the most difficult problem facing the conference is that of the limitation of production, since the largest of the great opium-producing countries—namely, China—has very little control over its own people, and the opium poppy is so valuable a crop. It has been found that the coca plant, from which cocaine is derived, could be replaced by the cinchona tree, the tea plant, the coffee tree, and the rubber tree: but whereas an area planted with coca will yield £146, the same area planted with cinchona produces £134, with tea £98, with coffee £80, and with rubber only £49. Furthermore, land suitable for coca cultivation is not always entirely suitable for cinchona cultivation. As regards the opium poppy, statistics are less reliable, owing to the varying contents of morphine in the opium grown in different countries. It is also a very valuable crop, and none of the plants which have so far been suggested for substitution would be as profitable. The best substitutes involving the least financial loss are plants producing valuable essential oils such as the citronella, geranium, rosa, and perilla (lemon grass). In the meantime, the League's Advisory Opium Committee has succeeded in drawing up certain concrete proposals, which are to serve as a basis for the discussions of the November conference, and which have now been circulated to all the States taking part in it, including non-members of the League. Amongst other suggestions, it is proposed that each country becoming a party to the convention should furnish every year an estimate of the raw material and manufactured drugs which it would require during the year and undertake further not to import more than was specified in its yearly estimates. These estimates, together with other statistics, would be sent to a central board, which would thus be in a position to follow the course of the international traffic, and see to it that the exports or imports into any country did not exceed the original estimates furnished by that country. A number of important provisions designed to strengthen the existing Hague Convention of 1912 will also be considered by the conference. The system of import and export Government licences instituted by the League, and already enforced by many Governments, whereby an export licence is only issued by the Government of the exporting country on the production of a certificate from the Government of the importing country, will be further extended. Provisions are also proposed to ensure that drugs which are brought into free ports do not escape control, and special arrangements are suggested for safeguarding the "entrepôt" trade as carried on by means of bonded warehouses. Other proposals are that the coca leaf shall be brought within the Hague Convention and that the definition of cocaine shall also include the artificial product obtained by chemical synthesis.

Finally, the Advisory Committee has appended two recommendations for the consideration of Governments. The first of these is based on a provision in British law, which has been found extremely useful in

dealing with illicit traffickers, who, while residing in one country, organise or arrange for illicit transactions in another country. The second is intended to meet a very serious difficulty, which is caused at present by the lack of any control over the exports from certain producing countries. Large consignments of raw opium without any restriction are being exported to the Far East under false declarations of destination for the purposes of the illicit traffic, and are being smuggled into China and elsewhere. It is accordingly proposed that Governments should exercise a control over the conveyance of opium and other materials or drugs in ships sailing under their flag.

THE NEW GOVERNOR OF MAURITIUS.

THE appointment of Sir Herbert Read, one of the Under Secretaries of State for the Colonies, to be Governor of Mauritius and his consequent departure from the Colonial Office are events of very considerable importance in the realms of tropical medicine and hygiene. Those medical men who have been privileged to work with him at the Colonial Office will view the change with mixed feelings. They will be glad to know that the important work of retrieving the sanitary condition of Mauritius, inaugurated by the retiring Governor, Sir Hesketh Bell, is assured of sympathetic and skilled consideration under the ægis of his successor, and they will regret parting with Sir Herbert Read, who, for so many years, has been the official at the Colonial Office most intimately concerned with questions of medical and hygienic importance in our overseas possessions. Sir Herbert Read is not one of those who desire to be for ever in the limelight. He works quietly but none the less effectively, and his medical and veterinary colleagues upon many committees can testify to his zeal and unfailing courtesy. For a layman his record has been remarkable and his activities on the medical side of official life are, in part at least, to be attributed to the fact that he was private secretary to Mr. Joseph Chamberlain at the time when that statesman, prompted by Sir Patrick Manson, evinced a keen interest in the health of our tropical possessions, more especially in those on the once dreaded West Coast of Africa. Mr. Read, as he then was, filled the post of chairman of the Committee appointed in 1901 to report on a scheme for the amalgamation of the medical services in the West African colonies and protectorates. Since then he has been closely associated with all questions relating to tropical medicine and hygiene in British tropical Africa and also in other parts of the Empire, and he has been largely instrumental in the establishment of the Tropical Diseases Bureau, which developed from the Sleeping Sickness Bureau, and of the Imperial Bureau of Entomology. Deeply interested in African sleeping sickness and its relation to big game, he was concerned in obtaining the appointment of an Interdepartmental Committee which in 1913–14 considered these subjects and issued a report regarding them. He had previously been a member of the International Conference summoned to inquire into that disease, and it was as a result of this Conference that he took the steps which led both directly and indirectly to the establishment of the above bureaux. He has also represented the Colonial Office in the various negotiations as regards tropical research with which the Royal Society has from time to time been associated. Perhaps his most important service to the cause he has so much at heart has been rendered as chairman of the Colonial Advisory Medical and Sanitary Committee. He has presided over the meetings of this body since its inception, and his tact and kind consideration, coupled with his ability for getting business put through, have greatly aided the deliberations. As chairman of the Tropical Diseases Research Fund he has also been able to help on the good work, and his activities in all these various directions were suitably recognised when the Royal Society of Tropical Medicine and Hygiene elected him one of its honorary Fellows. All those who have been privileged to come into close contact with Sir Herbert Read in connexion with medical and sanitary work in the tropics will unite in wishing him every success in his new sphere of duty, where he will have opportunities of applying practically those principles with which long years of devoted service at the Colonial Office have rendered him familiar.

THE ROYAL SOCIETY'S EXHIBIT AT WEMBLEY.

THE great exhibition at Wembley closes at the end of the present month, and the opportunity should not be lost by those who have not done so already of seeing the exhibit of pure science arranged by the Royal Society in the British Government Pavilion. The heart-lung apparatus shown by Prof. E. H. Starling has been employed by him and by his pupils for many important researches. It enables the mammalian heart to be studied under exactly controlled conditions. The demonstration of physical apparatus by Prof. A. V. Hill includes recording thermometers, string galvanometer, the hot-wire sphygmograph, and the "Katharometer" for determination of CO_2. There are also shown the apparatus used for experiments on the energy expended in movement by Prof. E. P. Cathcart, a demonstration of the physiological action of light by Dr. D. T. Harris, and one by Dr. H. Hartridge and Mr. F. J. W. Roughton on apparatus for the study of blood gases. These are all of real interest to those who have enjoyed an exact scientific training, although it may be doubted how far this exhibit can be expected to appeal to the general public. It has, however, the admirable lucidity of a lecture by one who has such mastery of a difficult subject that he can deal with it in simple terms. The "Handbook" (obtainable from Messrs. A. and F. Denny, Ltd., 163a, Strand, London, W.C. 2, 1*s.* 3*d.* post free) contains, besides a description of the exhibit, articles on the Origin of Man, by Dr. A. Smith Woodward; on the Circulation of the Blood, by Prof. Starling; on the Biological Action of Light, by Dr. Harris, and on Muscular Work, by Profs. Hill and Cathcart. These summaries by experts are of especial interest. The Royal Society evidently regards medicine as a branch of biology, for in Exhibit 223 we find among the portraits of eminent biologists those of William Harvey and Joseph Lister. This is taking a broad view of the situation.

STARCH IN DIABETIC FOODS.

THE chief complaint of a patient with diabetes mellitus concerns the reduction of the amount of starchy food and especially of the bread which is ordered. It is natural, therefore, that many attempts should have been made to prepare a substitute which will meet the approval of the patient. Bread contains starch, protein, and fat, and it is possible to remove nearly all the starch, leaving only the protein and fat. The more complete the removal of the starch the more difficult it is to produce a food which is at all palatable. But as the result of prolonged efforts a series of foods have been made which contain practically no starch, and although no one would eat them of choice, yet they are by no means unpalatable. However free from starch these foods are, the patient should remember that the caloric value of 1 oz. of a diabetic food is greater than that of 1 oz. of ordinary bread. This is partly due to the increase in the proportion of fat which has a higher caloric value than starch, and partly to the smaller proportion of water which the foods usually contain. Since the total caloric value of the diet must be considerably reduced the patient often has to make his choice between a diabetic food and other foods such as meat, fish, eggs, and cheese. Under these circumstances the wise patient usually takes a minimal amount of the diabetic food. Although the purest diabetic foods contain very little starch, there are others which contain a considerable amount. It is unfortunately a common occurrence for a patient who has made a fair recovery of sugar tolerance to return after a few weeks absence, either passing sugar or with a

considerable elevation of the blood-sugar. On inquiry the statement is often made that a diabetic food has been recommended by friends and bought from a small baker. Testing the bread with a weak solution of iodine is sufficient to show at once that the sample contains much starch. It is not always the small baker's bread which has been the cause of the return of symptoms. Patients are only too apt to eat anything which is called a diabetic food without reading the literature which is supplied with the food. One well-known company, for instance, supplies a diabetic bread which contains 40 per cent. of starch as compared with 55 per cent. in ordinary bread, and the fact that one-third of the starch has been removed is clearly stated in the advertisement. In spite of the removal of this amount of starch the bread still remains fairly palatable, and the patient who eats one and a half ounces of it should realise that he is taking the same amount of sugar as if he were eating one ounce of ordinary bread, while the caloric value is greater. The introduction of insulin has been responsible for the much greater attention which is being paid to the details of diet, and patients are taught to think of their food in terms of caloric value, sugar, protein, and fat values. It would therefore be a great help if the makers of the various foods would state clearly on the label as well as in the literature supplied the following data. One ounce of —— contains *a* g. of starch, *b* g. of protein, *c* g. of fat, and *d* total calories. If this were done it would assist the luckless patient who already has sufficient troubles to contend with.

A NEW METHOD OF SPHYGMOGRAPHY.

IN a volume[1] which maintains the high typographical standard of modern Spanish medical works, Dr. D. Miguel Gil-Casares of Santiago describes a new and ingenious method for obtaining sphygmographic records and the instrument he uses for the purpose. He calls his instrument a "palograph" and the method "palography," coining the words by derivation from the Greek πάλλω, παλλομαι, to oscillate or palpitate. The arterial, venous, or cardiac impulse is transmitted not, as in the ordinary sphygmograph, to a movable arm whose extremity records its movements on a surface of lamp-blacked paper, but to a column of some highly mobile fluid, such as ether or acetone, in a U-shaped tube, the movements of the liquid surface in the open limb of the U-tube being recorded photographically on a moving sheet of sensitised paper by the passage through it of a beam of light. The author states that Volhard's experiment for demonstrating the asynchronism of the carotid and jugular pulses by connecting manometrically to each a U-shaped tube containing a column of liquid, the liquid being coloured differently in the two tubes, gave him the idea that it might be possible to obtain a photographic record of the oscillations of the liquid due to the venous or arterial impulse. In the course of experiments on the subject the author noticed that a beam of light directed through a limb of the U-tube with its column of liquid on to a sheet of paper, gave, after passage through the liquid, a central bright line bordered by two dark bands. A profile of the tube with uniform illumination was observed where the beam had traversed the part of the tube containing air, while, at the level of the meniscus, a dark spot, or rather a small dark triangle with apex downwards, separated the two former areas. If for the sheet of ordinary paper a moving sheet of sensitised paper was substituted, the effect produced was that of a triple band with a dark lower portion where the beam had passed through the column of liquid, an upper, less dark, portion where it had passed through the air above the liquid, and a bright line, separating the other two, where the concave meniscus, acting as a double prism, had cut off the light from that portion of the sensitised paper immediately behind it. If now an arterial, venous, or cardiac impulse be transmitted to the liquid in the tube the triple band is thrown into waves. Its parts, however, retain their relative positions and the result is the production of a beautifully clear and bold photographic representation of the impulse under investigation. The author discusses the application of his method to the investigation of various pathological states, and his book is illustrated by numerous interesting, and indeed beautiful, "arteriograms," "phlebograms," and "cardiograms." His description of the instrument he has designed for the production of these photographic tracings (made by the Berlin firm "Sanitas") is not very clear. The actual instrument may, however, explain itself.

[1] Manual de Palographia Fisiologica y Clinica. Por Dr. D. Miguel Gil-Casares, Catedratico de Clinica Medica, Ex-Senador del Reino por la Universidad de Santiago. Prologo del Prof. Dr. L. v. Krehl de Heidelberg. Madrid: Librer.a Gutenberg de Jose Ruiz. 1924. Pp. xii.–216.

WELFARE WORK IN INDUSTRY.

THE report which we print elsewhere (p. 718) of the annual conference of the Institute of Industrial Welfare Workers gives good reason for the belief that if we are to have healthy and contented workers there must be close coöperation between the doctor and the psychologist on the one hand and the welfare worker on the other. For the welfare worker has come to stay. The number of women employed in this capacity has risen from a pre-war total of 25 to over 600. If the valuable work which is being carried out by the Industrial Fatigue Research Board and the Institute of Industrial Psychology, for example, is to be successfully applied to industry the welfare worker must help to prepare the way, for the workers are naturally suspicious of psychology, as one of their spokesmen said at the conference mentioned above. At the same time, the effect of the scientific study of industry is to make fatigue less prevalent, to make work "easier" in the sense that unproductive and misapplied energy is curtailed, and the workers themselves will be the first to benefit, quite apart from the economic aspect of increased output. In the heat of discussion, one of the employers present made the strange indictment of the medical profession when he said that some doctors only went near a factory in order to collect their fees, that they never saw the workers at work, and that they frequently never saw the workers they were supposed to examine. The general feeling of the conference was that such an experience is fortunately rare, but Dr. W. F. Dearden in the course of his paper urged to good purpose that the physical fitness of workers could only be fairly assessed in the light of the work they had to do, and he encouraged all doctors in industrial districts to familiarise themselves with the work their patients engage in. Another point of view was that expressed by Dr. A. G. Yates, who took the chair at one of the meetings, when he suggested that welfare workers could pass on to the workers much information about health in general: they might, for instance, preach the value of sunlight and the importance of proper diet in the light of recent research. The welfare worker would thus become the link between the factory doctor or psychologist and the workers. The health of the industrial population is a great national problem, and especially in the present period of depression the waste caused by ill-health and unproductive work should receive consideration.

THE first meeting of the Royal Commission on Lunacy and Mental Disorder will be held at the Royal Commission House, 5, Old Palace Yard, Westminster, on Tuesday, Oct. 7th, at 10.30 A.M., when evidence will be given by the Board of Control. On the following day at the same time the Ministry of Health and the Lord Chancellor's Department will give evidence.

THE Guild of St. Luke will hold its diamond jubilee service at St. Paul's Cathedral on Tuesday, Oct. 21st, at 7 P.M., when the Bishop of Truro will preach. Academic dress will be worn. Tickets may be obtained on sending stamped addressed envelope to Rev. H. Kirkland-Whittaker, M.D., Chaplain's House, Banstead Downs, Sutton, Surrey, or to Dr. Dorothea Brooks, 65, Park-road, Battersea, London, S.W. 11.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XC.—COMMON FRACTURES OF THE ELBOW-JOINT IN CHILDREN.

IT is generally recognised that all fractures about the elbow, excepting fracture of the olecranon, should be treated with the elbow fully flexed and forearm supinated. In practice it is important to realise that good results will not be obtained unless the displacement of the fragments is first reduced. Swelling of the limb may tempt one to leave the elbow at a right angle, with the result often that further flexion cannot be obtained when the swelling has subsided. Hence it is important to judge the appropriate methods of treatment for each fracture so that good function is produced and complications are avoided.

Supracondylar Fracture.

Supracondylar fracture (separated epiphysis of the lower end of the humerus) is a common accident in children, occurring usually between the ages of 5 and 10; it may occur before the age of 5 and in older children up to 15 or thereabouts. The injury is frequently called a separated epiphysis, but the line of fracture is on the diaphyseal (shaft) side of the epiphyseal line, so that the lower fragment consists of the epiphysis and some of the soft bone of the shaft adjacent to it. This fragment is displaced upwards and backwards, but, in addition, often laterally, either inwards or outwards. The radius and ulna move with the lower fragment. When the child is seen shortly after the accident the diagnosis causes little difficulty, but when swelling has commenced the bony points cannot be felt. X ray examination is essential: (*a*) to confirm the diagnosis, (*b*) for comparison with another plate taken after correction, and (*c*) for medico-legal reasons. Both lateral and antero-posterior views are required.

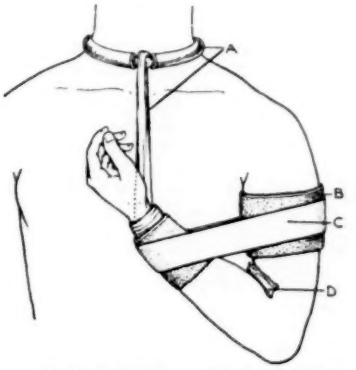
(1) *Reduction.*—In order to get efficient reduction, which is essential for a good functional result, the child must be given a general anæsthetic. The limb is then washed, dried, and powdered. An assistant, who may be a nurse, holds the arm firmly some inches above the elbow, and applies counter-traction at the appropriate time. The surgeon grasps the forearm in his right hand and holds it fully supinated. He places his left hand round the elbow, so that the thumb is against the front of the lower end of the shaft of the humerus and the fingers at the back of the joint over the lower fragment and olecranon. Traction is then applied to the forearm in the axis of the limb, allowing for the carrying angle at the elbow. This must be very strong and maintained during the subsequent manipulations. The elbow is then hyper-extended to free the lower fragment; next it is gradually flexed, during which manœuvre the left hand presses the humeral shaft backwards and the lower fragment and olecranon forwards. This will not be possible unless the strong traction is continued. After satisfactory reduction the operator carries the elbow into full flexion with the forearm fully supinated. It is judicious for a radiogram to be taken to determine if reduction is complete.

(2) *Fixation.*—Powder is dusted into the fold of the elbow and a small piece of dry boric lint pushed into it. The wrist has then to be fixed to the upper part of the arm. A piece of felt or cotton-wool about three inches wide is wrapped round the lower end of the forearm above the wrist and round the upper part of the arm. A piece of adhesive strapping two inches wide is carried round the arm and forearm over the felt. The radial pulse and finger-nails should then be examined to make certain that no interference has been made with the circulation. If the child is under 6 the flexed arm is then kept across the chest by two turns of a six-inch flannel bandage round the body and arm. An older child should have the wrist slung in front of the chest by a "collar and cuff halter." This consists of a bandage or webbing round the neck fixed to the wristlet of the bandage. It is more comfortable if the bandage round the neck is passed through a piece of rubber tubing, and the forearm can only be kept fully supinated if the connexion between the collar and cuff is made on the inner side of the wrist. The elbow itself is left uncovered.

FIG. 1.

Diagram of supra-condylar fracture.

FIG. 2.



Method of fixation of arm. A, Collar and cuff halter. B, Felt. C, Adhesive strapping. D, Boric lint.

(3) *After-care.*—The limb is kept in this position for two weeks, during which period no movements should be allowed at the elbow, but finger and thumb movements should be encouraged from the commencement. Active or passive movements are dangerous and predispose to complications. Massage may be harmful if rough kneading is employed; it should be very gentle and applied where the elbow is swollen. At the end of two weeks the strapping is cut off, the child told to touch the shoulder with the fingers, and the forearm then let down a little every two days. It can be fixed with a flannel bandage round the arm and forearm in place of the strapping, or by the halter. Each time it is let down the child should be made to touch the shoulder, to show he has retained the full flexion. If he cannot do this, full flexion should be maintained for a few days longer. As a rule, in children the elbow can be at a right angle in three weeks after reduction. Shortly after this fixation can be discarded, but it may be wise for the child to wear a sling when out of doors. At this time he should be encouraged in active movements to regain the extension, such as pulling on a chair, but passive movements should be avoided as much as possible. If the elbow is greatly swollen, as will usually be the case if the patient is seen a day or two after the injury, treatment will have to be somewhat modified. Reduction should be carried out and the limb powdered, but full flexion cannot be obtained. Adhesive strapping should be avoided, as it may cut into the skin. Hence the forearm and arm should be bound together by two turns of a flannel bandage, in a position of as much flexion as can be obtained without causing undue pressure in front of the elbow. The wrist is then fixed in front of the chest by a collar and cuff halter. As the swelling subsides this can be drawn up every two days so as to increase the flexion and the bandage made more tight round the arm and forearm. The remainder of the treatment is as described above.

Difficulties and Complications.

(1) *Failure of Reduction.* Should reduction not be obtained, the best results follow open operation for reduction of the lower fragment.

(2) *Great Swelling* and blistering of the skin. The latter may be associated with the former. The region of the elbow should be painted with iodine and blisters pricked with a sterile needle and a dressing

applied. The modification of the treatment necessary in this condition has already been described.

(3) *Ischæmic Contracture* (Volkmann's paralysis). This condition is probably preventable by the avoidance of tight bandages round the elbow and by care in regulating the flexion, so that it is not so great as to cause compression of the brachial artery.

(4) *Myositis Ossificans* may follow this fracture if the reduction is performed roughly and if massage and movements are carried out injudiciously. It occurs more readily if the elbow is kept at a right angle. Its presence can be diagnosed sometimes as early as three weeks after the injury and straightway appropriate measures should be adopted to aid its disappearance. Absolute fixation of the elbow in as much flexion as is comfortable is indicated for some months. Massage and all movements are to be avoided, and operative treatment for removal of the bony mass should not be undertaken until after an interval of at least six months. The results of early operative treatment for this condition are disastrous, and late operation often fails to cure the condition owing to the tendency for the new bone to re-form.

(5) *Nerve Injuries.* Either the musculo-spiral, ulnar, or rarely median nerve may be paralysed as a complication of this fracture. In the case of the former a small "cock-up" splint should be worn to prevent the wrist dropping as soon as the arm is put in a sling, and electrical treatment commenced for the paralysed muscles. If there is no sign of recovery in three months, operative interference becomes necessary. When ulnar paralysis is associated operation is indicated for reduction of the fracture and inspection of the nerve.

(6) *Deformity* may occur at the elbow after partial or incomplete reduction, or if the forearm is brought into wrong alignment with the arm. Late operation may be required for cubitus valgus or varus.

Other Fractures.

Fracture of the external condyle in children consists of a separation of the capitellum and a small portion of the outer part of the lower end of the humerus from the humeral shaft. It is not very uncommon. The exact nature of the injury must be diagnosed by a skiagram to determine if there is serious displacement or not. If there is no displacement the elbow is fully flexed and the forearm supinated, as described above. Should displacement be present, reduction can be attempted under anæsthesia, but open operation may be required.

Fracture of the internal condyle is unusual before 10; in children similar treatment to that of fracture of the external condyle is applicable.

The *T- and Y-shaped fractures*, when there is a more or less transverse fracture of the lower end of the humerus with a line of fracture also into the elbow-joint, are uncommon in children. Treatment consists of open operation if there is gross displacement, but if the fragments are in good apposition the elbow should be kept fully flexed and the case treated similarly to the supracondylar fracture.

The *coracoid process of the ulna* is very rarely fractured in children in association with a backward dislocation. Injury to the *upper radial epiphysis* (the head) is also rare in children. The elbow should be kept flexed in each case. In the former case the dislocation is reduced first.

Summary.

In the treatment of fractures about the elbow-joint in children the following points are of importance: (1) efficient reduction; (2) position of acute flexion with supination; (3) avoidance of unskilled massage and early movements; (4) avoidance of lateral or side splints, which tend to deformity at the elbow, and right-angled anterior or posterior trough splints, which do not keep the fracture reduced and cause other untoward results; (5) operation is indicated when reduction is impossible or deformed union is present.

ST. J. D. BUXTON, F.R.C.S. Eng.,
Assistant Surgeon and Assistant Orthopædic Surgeon, King's College Hospital.

Special Articles.

THE BLOOD PLATELETS AND THEIR PLACE IN MEDICINE.

BY S. C. DYKE, M.D. OXF., M.R.C.P. LOND.,
CONSULTING PATHOLOGIST TO THE WOLVERHAMPTON AND STAFFORDSHIRE HOSPITAL.

THE history of the blood platelets or thrombocytes in the past has been a chequered one; first studied with care and accuracy by Bizzozero in 1882, their existence has since been repeatedly affirmed and denied, and innumerable sources of origin and functions assigned to them. Bizzozero himself believed them to arise in the bone marrow from a genetic line distinct from that of the other formed elements of the blood; others have regarded them as a precipitate formed in the plasma at the moment of shedding and as having no existence in the circulating blood: Hayem thought that they were young red cells, and accordingly named them "hæmatoblasts," a title which still encumbers hæmatological nomenclature more particularly in France. It remained for an American worker, H. Wright,[1] to promulgate what appears to be the true theory as to their origin. This worker on the basis of certain tinctorial affinities between the platelets and the cytoplasm of the megakaryocytes on myeloplaxes of the bone marrow postulated a relationship between the two. He demonstrated the power of the megakaryocytes to throw pseudopodia into the sinuses of the bone marrow and produced strong evidence for the belief that these cytoplasmic processes becoming detached from the parent cell were carried in the blood as the platelets. All the weight of such evidence as has accumulated since Wright published his theory is in its favour. His views gained complete acceptance in America several years ago, and it is a demonstration of the value of a sound theory to practical medicine that his work soon found important applications at the hands of Duke and other American clinicians. In this country, possibly because they were based on purely morphological grounds, Wright's views did not gain general acceptance, and the very existence of the platelets continued to be doubted.

It remained for Ledingham[2] in 1914 to demonstrate beyond a doubt the existence of the platelets as entities by preparing, with guinea-pig platelets as antigen, an anti-serum, capable, on parenteral injection, of destroying the platelets of the same species. This work has since the war been assiduously followed up by Bedson, who has not only confirmed this observation, but has shown[3] that the disappearance of the platelets from the blood of the injected guinea-pig is followed by severe purpura. Furthermore, by preparing anti-sera against the other formed elements of the blood, Bedson has been able to show that none of these bear any close relationship to the platelets and certainly cannot serve as their sources of origin; anti-sera active against red cells, or against the granular or non-granular white cells are without effect upon the platelets.

The Effects of Thrombopenia.

That the elements are entities there can now be no reasonable doubt: the complete proof of their sources of origin awaits demonstration, but as to their relationship to the hæmorrhagic diathesis and to the production of purpura, the proof, both experimental and clinical, is now complete. It has been established that destruction of the platelets in the guinea-pig is followed by purpura; clinically Duke[4] has shown that in the human subject, when the platelet count descends below 60,000 per c.mm., there is an abnormal tendency to bleed, that when it falls below 10,000 hæmorrhage becomes severe and when below 1000 fulminant. He has, moreover, demonstrated that such a thrombopenia or diminution in the platelet count is associated with prolongation of the bleeding

time and failure of the blood-clot to contract, though the actual clotting time remains normal.

Frank[5] and many other workers on the continent and in America have fully confirmed Duke's observations. Frank has endeavoured to evolve a hypothesis which should correlate all the forms of purpura associated with thrombopenia. He defines three main forms of this condition: intermittent thrombopenia, in which the platelets only occasionally fall to a low level and in which the purpuric attacks consequently occur at intervals; essential thrombopenia, in which the platelet count is chronically low and in which there is a tendency to hæmorrhage and bruising on slight trauma; and aleukia, in which both the granular leucocytes and the platelets are greatly reduced in numbers and the hæmorrhage is fulminating and usually fatal. All these forms Frank believed to be due to a primary deficiency of the bone marrow, the last only being found in conjunction with and as a result of a completely aplastic state of the hæmatopoietic system. Cases of this type in which infection has followed upon the myelophthisic condition have recently been described by the present writer[6] in THE LANCET.

The Rôle of the Spleen in Thrombopenia.

Enlargement of the spleen is a feature of most of the cases described above, such spleens on histological examination frequently showing masses of platelets in the sinuses; this has led some workers to believe that the actual cause of the thrombopenia might be the destruction of the platelets by the spleen. It has remained for Bedson, as recently pointed out in THE LANCET,* to demonstrate clearly by experiment the thrombocytolytic action of the spleen. He showed that in the guinea-pig splenectomy is followed by a great but temporary rise in the platelet count; so great is this rise that recently splenectomised guinea-pigs are capable of standing without symptoms a dose of anti-platelet serum which in unsplenectomised guinea-pigs produces violent purpura. Bedson, however, found that even in splenectomised animals the platelet count soon reverted to a normal level. This last observation makes it difficult to understand the permanent good results reported recently as obtained by splenectomy in human cases of purpura hæmorrhagica.

A possible explanation of this is offered by the recent work of Seeliger[7] in Germany. This author, by the examination of marrow obtained by sternal puncture from patients suffering from purpura, claims to have been able to divide his cases into two classes. In the first the bone marrow showed megakaryocytes in normal or excessive numbers, these, however, being characterised by the absence of the normal granulation of the cytoplasm. In the second class the marrow was aplastic, showing few hæmatopoietic cells of any sort. In the first class the spleen on histological examination was found to be packed with platelets; in the second platelets were absent from this organ. The cases of the first type Seeliger regards as dependent upon an abnormality of the megakaryocytes, which consequently produce abnormal platelets, and these being abnormal are removed by the spleen as soon as liberated in the circulation. To this type of case Seeliger would limit Frank's term "essential thrombopenia." The second class of case he regards as dependent upon a failure of function upon the part of the red marrow, the platelets, along with the granular leucocytes, undergoing a diminution as a result of the collapse of the machinery for their production; to this type he would limit the term "aleukia." Beneficial results are only obtained by splenectomy in the first class of case, such benefit being due to the withdrawal of the thrombocytolytic activity of the spleen and explicable on the assumption that even an abnormal platelet is better than none at all. In the second class of case the thrombopenia is dependent not upon the thrombocytolytic activity of the spleen, but upon actual failure of platelet production at its source, and in this type splenectomy is of no avail.

* THE LANCET, August 2nd, p. 229.

The Platelets and the Bone Marrow.

Leaving out of the question the thrombocytolytic action of the spleen, it is apparent that on theoretical grounds any condition of marked general activity of the bone marrow should be associated with an increase of the platelets. This has been put to the test of observation by Dr. G. J. Crawford, who reported the results of his work in a recent number of THE LANCET.[8] Dr. Crawford made counts of the platelets and of the granular and non-granular leucocytes in a number of conditions, some associated with an exaltation and some with a depression of the activity of the hæmatopoietic system. A study of his figures shows that, roughly speaking, the platelets are increased when the bone marrow is active and decreased when the contrary is the case. This is particularly well shown in the leukæmias; in the myeloid type a great excess of the leucocytes of the granular order is always associated with an intense thrombocytosis, the platelets in one case reaching nearly a million and a half per c.mm.; in the lymphatic type, on the other hand, the platelet counts are invariably low.

One of Dr. Crawford's cases also shows the marked effect of splenectomy in the human subject, the platelet count rising from under half a million before the operation to over a million shortly afterwards. The evidence marshalled in this paper points clearly to the bone marrow as the source of the platelets and further indicates their affinity, however remote, with the leucocytes of the granular order.

Interference with the function of the bone marrow as the source of the platelets offers a possible explanation of the thrombopenia observed by Cramer, Drew, and Mottram[9] as a result of keeping rats upon a diet deficient in vitamin A. In view, however, of the fact first demonstrated experimentally by Delrez and Govaerts[10] that the platelets tend to accumulate about any foreign particles in the blood-stream, bacteria included, it is possible to offer another explanation of this phenomenon. There is good reason to believe that upon diets deficient in either the A or C vitamin the gut wall becomes so damaged as to permit of the passage of micro-organisms into the blood-stream; such dissemination of organisms into the blood, if plentiful and long continued, might conceivably bring about a considerable thrombopenia. Observations upon the platelet counts in chronic microbic diseases might throw some light upon this point.

One of the few such observations is the article by Dr. R. G. Bannerman,[11] which recently appeared in THE LANCET, and this it is somewhat difficult to fit into the picture as we now see it. As the result of a long series of observations made upon patients suffering from pulmonary tuberculosis, this worker has arrived at the conclusion that a favourable prognosis is indicated by a low and the reverse by a high platelet count. In his series all those cases in which the platelet count remained below 400,000 per c.mm. tended to do well, while those in which it rose above 510,000 per c.mm. on the whole went steadily from bad to worse. It is difficult in the light of present knowledge to offer any explanation of this phenomenon, but if confirmed it should prove of the greatest value in the prognosis of pulmonary tuberculosis.

The recent appearance of two papers on the subject in THE LANCET with other recent work seems to indicate that, after a long period of neglect, the blood platelet is receiving its meed of attention from British clinicians; that this revival of interest should have followed so speedily upon the acquisition of the lately won knowledge of the nature and rôle of these bodies must be more than a coincidence, and serves to demonstrate the value of the experimental method to medicine.

References.

1. Wright, H.: Virchow's Arch. f. Path. Anat. u. Physiol., clxxxvi., 1906.
2. Ledingham, J. C. G.: THE LANCET, 1914, i., 1673.
3. Bedson, S. P.: Jour. Path. and Bact., 1922, xxv., 94; 1923, xxvi., 145.

(*Continued at foot of next page.*)

THE HEALTH OF THE ARMY IN 1921.*

THE medical profession has been eagerly awaiting this report by Sir William Leishman, Director-General of the Army Medical Services, who has already taken his share in producing the Medical History of the War, nor will any disappointment be felt at this compilation on the health of the army in a time of official peace. The present report is numbered Vol. LVII.; its predecessor, Vol. LVI., covered the first seven months only of 1914, as the reports during the war years were included in the Medical History of the War, while for the year 1920, owing to the abnormal conditions which then existed, it was decided that no report should be published. The report for 1921 is of great importance, as it tells of the careful organisations built up in the army for the study of hygiene, of pathology, and for the care of the soldiers' teeth. Sir William Leishman explains the delay in submitting the report as due to the many changes in the composition and distribution of the army which took place both during and after the period under review in connexion with the gradual reversion of the army to a normal peace footing.

The main body of the report is divided into five sections, dealing with (1) general considerations, (2) medical examination of recruits, (3) hygiene, (4) pathology, and (5) dental treatment.

General Considerations.

The health of the army in 1921 had considerably improved since the preceding year, but continued to be less satisfactory than before the war, owing to the poor physical condition of many of the recruits hastily enlisted to fill the vacancies of those demobilised on the conclusion of war. This, coupled with the fact that medical officers with experience in the medical examination of recruits were not always available to carry on this important work, led to a large number of men being passed as fit for service in the army who would otherwise have been rejected. But a return to the high standard which existed in 1913 may be expected at no distant date.

The average strength of *officers* in the regular army in 1921 was 13,897, of which the rate of admission to hospital per 1000 was 374·2, and the death-rate 5·9. The chief causes of illness were (expressed as the ratio per 1000) diseases of the digestive system (other than inflammation of the tonsils and of the liver) 56·6; local injuries, 52·8. Gunshot wounds accounted for eight deaths in Ireland, but no "wounds in action" are returned. The number of officers "finally discharged" is not mentioned.

The average strength of *warrant officers, non-commissioned officers, and men* was 239,525. The ratio per 1000 of illness was 650, with 1·2 deaths and 27·48 final discharges. The most frequent admissions to hospital were due to malaria, diseases of the digestive system, and local injuries, while the most frequent causes of death per 1000 were: injuries 1·34, pneumonia 0·52, malaria and diseases of the digestive system, each, 0·27 per 1000. The case-mortality of enteric was 8·33; of pneumonia 11·7; of small-pox 22; and of the four cases reported of meningococcus infection, three died. Suicides, it may be said here, are not counted into the total of deaths. Troops on board ship numbered 4551, and had relatively few admissions to hospital (414·6 per 1000) and only three deaths, two from pneumonia, yet there was a relatively higher case incidence of influenza, pneumonia, and bronchitis.

For this year for the first time a table is given summarising the health statistics of soldiers' wives. Their chief reason for admission into hospital was diseases of the generative system, in a ratio of 50·3 per 1000; diseases of the digestive system came next, 33·3. The incidence of pneumonia and bronchitis among the women is only a quarter of that among the men. There were on the Married Quarters Roll this year 24,684 children, with a death-rate of 12 per 1000, due chiefly to diseases of the digestive system and to malaria. Mention is made of 2709 cases of parturition.

Medical Examination of Recruits.

The statistics are, it is observed, compiled from the "recruiting year" (Oct. 1st, 1920, to Sept. 30th, 1921), in which 53,142 recruits were taken into the army and 32,962 candidates were rejected, either at once or within six months. The rejections were more numerous in 1921 than in 1913 (354·01 per 1000 as against 202·5). This was partly due to the standards having been raised, particularly as regards teeth and eyesight, and partly because men could now be rejected within six months of enlistment, not only in their first three months, as was the rule before the war. Also there was not, in 1921, time to "nurse" into efficiency the less physically fit recruits. Of candidates examined and passed, 791 per 1000 were natives of England, 110 of Scotland, 95 of Ireland, and 4 were born in British Colonies and foreign countries. The chief causes of rejection on examination were: sub-standard chest measurements 33 per 1000 of total candidates; defective vision, 58; heart diseases, 38; teeth lost or decayed, 35; flat-feet, 27. Of those at first received but rejected later the chief disabilities were middle-ear disease and defective vision. Tubercle claimed a rejection ratio of 4·3 per 1000 on first examination and 0·28 later; in 1914 the figures were 2 on first examination, and 0·14 later.

Hygiene.

The great difference between the present report and those that preceded it lies in the changed outlook. Former reports told of events passed, here aims for the future are suggested. The hygiene of the army is being systematically assured. Commanding officers are responsible for the sanitary condition of the areas of their units, so they and their staffs must be educated. Consequently, courses of instruction for combatant officers and personnel are held at the Army School of Hygiene. Six lectures on hygiene are given each term to senior cadets at Woolwich and Sandhurst. Instruction is also given to all ranks at all stations. Junior officers of the R.A.M. Corps receive instruction at the College, and go through a practical course at the School of Hygiene. They take a senior officer's course at the College some eight years later. Officers and other ranks of the Corps who propose to specialise attend an advanced course at the College and Army School. There are deputy assistant directors of hygiene at important stations, assistant directors of hygiene are on the staffs of deputy directors of medical services of commands, and there is a director of hygiene on the staff of the director-general. Above all these is the Army Hygiene Advisory Committee, which has been in existence since 1919, on which sit representatives of the quartermaster-general's department and (since 1921) of the general staff. The objects of this new organisation are stated to be: (1) To bring under one directorate the hygiene specialist officers of the army. (2) To raise the standard of hygiene in the army, and to help it by fostering research. (3) To ensure that the welfare and health of the troops are carefully watched by officers who have made a special study of the subject, and thus not only improve the fighting efficiency of the army but effect a saving to the State by preventing wastage

* Report on the Health of the Army for the Year 1921. H.M. Stationery Office. 1924. Pp. iv. + 99. 3s.

(*Continued from previous page.*)

4. Duke, W. W.: Arch. Int. Med., 1913, xi., 100; Jour. Amer. Med. Assoc., 1915, xv., 1600.
5. Frank: Berlin. klin. Woch., 1916, Nos. 27 and 41.
6. Dyke, S. C.: THE LANCET, 1924, i., 1048.
7. Seeliger, S.: Klin. Woch., iii., 17, 731, 1924.
8. Crawford, G. J.: THE LANCET, 1924, ii., 595.
9. Cramer, W., Drew, A. H., and Mottram, V. H.: Proc. Roy. Soc., B, xciii., 449.
10. Delrez, L., and Govaerts, P.: Travaux de l'Ambulance "Ocean," 1918, ii., fasc. 1, 209.
11. Bannerman, R. G.: THE LANCET, 1924, ii., 593.

from disease and physical inefficiency. Three reports of investigations under object (2) are mentioned in the report, but references to the places of publication would have been an advantage. In 1921, after considerable research, a new scale of rations was adopted, which might with advantage have been included in the report for the information of people who, in 20 or 40 years' time, may be examining these reports to decide what were the influences in 1921 bearing on some recently differentiated disease. Transports for troops have been considered, and space per man has been increased by 70 per cent. Barracks are being rebuilt and remodelled as funds become available; gas is being replaced by electric light in barrack-rooms; six linear feet of wall-space per man is required, as the necessity for this was brought forcibly to light during the influenza epidemic of 1918. Baths (shower, foot, and slipper) are being provided (probably with hot water, but this is not stated); cookhouses and dining halls are being improved, so that the serving of food shall be bettered, and that men may thus be induced to stay in barracks. More and better married quarters, better schools, and further improvements to hospitals will be provided as funds come in sight. Mother and child welfare schemes were undertaken at many stations; they were much appreciated, and admirably carried out. The disease that caused the greatest loss of service was *malaria*, with a ratio of cases of 99·8 per 1000 men, a death-rate of 0·27, and the rate of invalids discharged finally being 0·48. At Jenin, in Palestine, the number of cases was reduced by sanitary effort from 600 in 1920 to 2 in 1921. At Richon, in Palestine, *Anopheles maculipennis* was found to travel one and a half miles, for they disappeared when the suspected swamp one and a half miles away was drained. An increase of malaria in South China is ascribed to a long spell of dry weather. The Waziristan Force, with 1018·3 admissions to hospital per 1000 and a death-rate of 2·39, seems to have been the part of the army most severely attacked. *Venereal diseases* showed a maximum incidence in Constantinople (228·5 per 1000) and in Germany (169·2). The Eastern Command had the lowest rate with 36·0 admissions. The figures for the United Kingdom were 40·3 as compared with 74·0 for the whole army. The high prevalence in Constantinople is ascribed in this report (as in that of the Navy for the same year) to the multitude of unfortunate destitute refugees. Efforts are being made to reduce occasions of venereal infection by giving men greater comfort in their barracks, by sports and games, by education, by disciplinary insistence on notification and early treatment. Penalties imposed on men who contracted venereal disease did not win approval, and tended to concealment of the disease.

Disorders of the digestive system are a source of much distress to the young soldier, and are ascribed to his consuming too many sweet cakes and tea between meals. It is hoped to remedy this by better cooking and serving of meals, and by better dental treatment. We notice, however, that officers suffer from these diseases just as much as the men. Local injuries in riding schools, gymnasia, and on the football field cause great loss of service, and are being carefully watched with a view to prevention. *Boils*, which during the war were reported to be associated with deficiency of vitamin C, are specially prevalent in mounted corps, particularly if the barrack-rooms are over stables. *Sand-fly fever* gives rise to disability, but causes no deaths. The small-meshed curtain required to keep out the flies becomes intolerable in the hot airless weather when the insects are most numerous, and men will not sleep under them. The fever is most prevalent in Iraq, North (but not South) India, and in Egypt. *Influenza* was found to be best restrained by a preventive vaccine with streptococci, pneumococci, and Pfeiffer's bacillus. *Scabies* caused much loss of service, each of the 4900 cases averaging 11 days off duty. It was most prevalent in Germany, least in Iraq, and heavy at home, where there are more furloughs, with which its prevalence is officially connected. The Danish treatment of scabies,[1] which has shortened term in hospital by a half or even more, has now been adopted by the army.[2] One case of *actinomycosis* is mentioned in Ireland, and three of *encephalitis lethargica*. *Heat-stroke* came on at Basrah when the maximum shade temperature was 127° F.; 15 per cent. of the cases admitted alcoholic excess, and these all died; 18 per cent. were total abstainers and recovered.

Pathology.

An organisation similar to that described under hygiene, but wholly within the R.A.M.C., has been built up to study the pathology of the army; this trains workers at the College for the immediate identification of pathological conditions in order that early and accurate diagnosis shall allow effective measures to be instituted to curtail the spread of disease. Vaccines were made for the army at the College in 1921, and so, it is calculated, a sum of £20,000 was saved to the country by the R.A.M.C. An organised research was instituted on "catarrh," and *B. coryzæ segmentosus* was thereby brought specially to notice and added to the "anti-cold" vaccine, which thus had its efficiency, it is believed, increased. *Kala-azar* was found in two children in Malta, where many native dogs are infected with leishmaniasis. In the Rhine army it was thought that a small outbreak of *diphtheria* among bandsmen was spread by their instruments. *Vincent's angina* also occurred in that force, and 1125 cases out of the total force of 9870 were notified. American military surgeons, too, have noticed this infection in Germany. In Iraq a Pasteur institute was established at Bagdad. In this area anthrax, cholera, diphtheria, dysentery were of frequent occurrence. Leishmaniasis (Bagdad boil) is very common in native children. Malaria, plague, sand-fly fever, and bilharziasis were also common. Thus Iraq provided an interesting field for a pathologist. There were 11,544 men in the command and eight laboratories were provided.

Dental Treatment.

Dental treatment of the recruit began in 1906, when each otherwise fit recruit might have 20*s*. worth of dental work done on him if his dental condition thereafter would allow him to be accepted; by this method 1700 recruits were gained in 1907. Whole-time dental surgeons were required in the war, and were given commissions in 1915. At home during the war 70 per cent. of recruits required some dental treatment. An Inspector of Dental Services was appointed in 1918, and the Army Dental Corps was formed in 1921, to secure for the troops a high standard of dental service and thus reduce wastage. The dental officers were sent to the recruiting depôts. To simplify the grading of dental fitness points were given for all teeth in the upper jaw which were in good functional opposition to teeth in the mandible. Two points were given for each really sound molar, and one point for other teeth. Each tooth counted had to be sound or reparable. The maximum was 22, and no one whose total score was below 11 was received. During 1921, 82 per cent. of recruits required dental treatment and 81 per cent. of these got it. Lectures on oral hygiene are given to the troops; the new recruit is very readily teachable in this respect, and the majority of soldiers now clean their teeth daily. The proportion of teeth saved is continually rising; in 1920, 53 per cent. were conserved, in 1921, 59 per cent., while the number of extractions is falling. Scaling and treatment of infected gums and mouths are also done.

[1] THE LANCET, 1920, ii., 1251.

[2] Journal of the Royal Army Medical Corps, March and April, 1924.

DEVONSHIRE HOSPITAL, BUXTON. — The sum obtained at a bazaar held recently in Buxton in aid of this hospital amounts to £8500. Money is still coming in, and the £10,000 necessary for the payment of the debt on the new extensions of the hospital will be realised.

INDUSTRY AND MEDICAL SCIENCE.

A WEEK-END CONFERENCE.

THE DOCTOR AND THE PSYCHOLOGIST IN INDUSTRY.

THE Institute of Industrial Welfare Workers held its annual Conference at Swanwick on Sept. 26th to 29th, when the above subject was discussed. Over 200 members were present, representing about 100 firms.

Dr. C. S. MYERS (Director of the Institute of Industrial Psychology) opened the discussion at the first session with a paper entitled

What Psychology Can Do for Industry.

He explained that the subject was too vast to treat as a whole, and he proceeded to describe certain points where psychology was actually doing valuable work for industry, illustrating his remarks with numerous lantern slides. Dealing first with the "work-curve," he described it as being as important to the industrial psychologist as a heart or pulse tracing is to the physician. After laboratory experiments on work-curves obtained under various conditions, similar investigation was carried out in certain factories and it was found that these curves were influenced by many factors. With practice, for example, a work-curve goes up while with fatigue it tends to fall, and if the curves be examined in detail other features become apparent. There is, for example, a definite spurt at the beginning of the day and a similar spurt at the end—spurts which are not necessarily conscious efforts. It was further found that if a person is taken away from his work for a short time he takes a certain period to "warm up" on his return. He passes through an "incitement" stage which is to be distinguished from the lower work-curves obtained after longer periods of absence from work which are due to lack of practice. By a study of a series of these curves it is possible to pick out those giving the best results and the work is then arranged accordingly. Dr. Myers next dealt with the influence of "rest-pauses." Work-curves were obtained showing higher levels after rest-pauses had been introduced. In one factory a 3 per cent. decrease in time worked, due to rest-pauses, led to a 5 per cent. increase in output. Pauses associated with change of work in another factory gave rise to a 14 per cent. increase in output and the workers were very appreciative of the better conditions. This aspect of the subject had been scientifically studied in the laboratory and the effect of varied occupation was strikingly shown. The "ease" of movement in occupation was next discussed. Too much stress in the past has been laid on the speed and extent of movements in mechanical tasks, but it had now been shown by experiment that "ease" of movement is the important factor. In one investigation an increase of output amounting to 35 per cent. had been attained simply by enabling certain work to be done with greater ease, and the workers themselves were struck with the lessened fatigue felt at the end of the day. Quality of work is also an important subject, and investigations had been carried out as to the reasons for spoilt work. In connexion with certain tea-shops breakages were markedly reduced (a 70 per cent. reduction in the breakages of cups, for example) by a study to ascertain how, why, and where breakages occurred followed by remedying of certain defects in the system of waiting. With reference to fatigue it had been discovered that the greater the skill of a worker at a particular job the less fatigue he experienced, and this was largely due to the fact that in the case of the less skilled worker "rhythm" breaks down earlier. Although it has frequently been shown that moderate decrease in working hours led to an increased output, the effect of excessive decrease in the number of working hours was to diminish the hourly output. This, it was suggested, is possibly due to loss of "incitement" caused by a long period of absence from work, over, for example, a long week-end. In observing the effect of decreasing the hours of work on the work-curve the results are not always immediate, often as much as three months is necessary to get the full effect. Dr. Myers next dealt briefly with vocational psychology, showing the importance of psychology in vocational guidance—choosing the best job for the individual; and in vocational selection—choosing the best individual for the job. Tests for special and general intelligence could be combined with the usual interview.

An interesting discussion followed in which the importance of the welfare workers who live in the atmosphere of the factory and in close touch with the workers themselves was emphasised.

At the second session Dr. W. F. DEARDEN opened the discussion on

What Medical Science Can Do for Industry.

He pointed out that we had reached a stage where manufacturers were at last beginning to realise what medical science can do for industry. The war had hastened this state of affairs, for the importance of the health of the worker in relation to output had been forcibly realised in connexion with munition work. Despite this the full significance of what medical science can do for industry has not been completely grasped, and the force which industrial welfare can exert will greatly help in driving this home. Dr. Dearden said that the foundations of the relation of medicine to industry were laid 200 years ago by Ramazzini, of Padua, who held very definite views which he expounded in a famous treatise. This Italian doctor had in his mind several basic principles which still held at the present day. He understood that the worker must be studied as a human machine, he realised the importance of cleanliness and ventilation. A century elapsed before his work was supplemented and nearly two before industrial hygiene became a properly defined branch of medical science. The study of the human machine could be undertaken by the physiologist and by the pathologist. The physiologist has to discover how bodily powers react to occupational conditions, and by suitable adjustment of these conditions he gets a maximum of output without waste of energy. Fatigue in its physiological aspect must also be dealt with so that no energy expended is unproductive. In the present position of trade the medical profession had a very definite function, and it can do its share towards putting industry on its feet. Dr. Dearden referred to the results of the advent of the industrial physician in America, where special courses of training exist for this branch of medical science. While industry is not quite on the same plane in this country it appears, nevertheless, that purely from an economic aspect industrial medicine, if properly applied, could bring about a tremendous annual saving. Dr. Dearden quoted Prof. E. L. Collis, who assesses the total possible saving to industry at £140,000,000 a year. The pathologist studies the morbid effects, local and general, brought about by fatigue. By the scientific study of industrial diseases, such as anthrax, for example, he has in the past done a great deal to cut down the incidence of these disorders. Ramazzini insisted in his book that the health of the workers must be studied in the workplaces themselves, and the fact that the earliest factory inspectors appointed in this country included a medical man was a very important one. With the advent of the certifying surgeon there was an increasing tendency to regularise employment according to physical fitness and the returns of these surgeons showed a gradually increasing percentage of rejections since they were introduced. The certifying surgeon acquires a great deal of knowledge of the factory and the processes carried on which should help him considerably in cases he has to deal with under the Workmen's Compensation Act. Dr. Dearden referred to the valuable work done by the medical inspectors of factories, and regretted that

there were so few to do the large amount of work on industrial hygiene which was necessary. He urged that the State should employ more. Employers had their obligations, moral as well as legal, with regard to welfare work, and they had already done a great deal. He pleaded for a greater uniformity in the examination of young persons, and suggested that entrance and periodical medical examinations were desirable. The question of the examination of adult workers was more controversial, but it would be a great asset to have a health record of all the workers as long as this did not arouse suspicion amongst them that an entrance medical examination, for example, would have a deleterious influence on their engagement. Dr. Dearden pointed out how the hygienic requirements of the workers had been studied by medical science in relation to cleanliness, ventilation, humidity, lighting, and such like. He concluded by emphasising the importance of a knowledge of the occupation of a patient to his doctor, and urged that industrial medicine be made a compulsory part of the medical curriculum.

In the discussion which followed, the importance of the medical supervision of all workers and especially of adolescents was emphasised, and a plea was urged for a more satisfactory linking up with the school medical service.

At the third session the subject for discussion was

Accident Prevention: the Psychological and Physiological Aspect,

and this was dealt with from the *psychological aspect* by Dr. MILLAIS CULPIN. He began by pointing out that to say that accidents were due to carelessness, inattention, and so forth, did not go deep enough. There are certain people who are particularly susceptible to accidents, and this personal factor should be investigated to see what particular characteristic was associated with this susceptibility. Dr. Culpin then described the heterogeneous group of so-called "nervous" diseases, including neurasthenia, nervous breakdown, &c., and pointed out that common as these complaints were they rarely received investigation, although half an hour's talk would often clear up the trouble. That the "anxiety neurosis" may be associated with the occurrence of accidents was strikingly shown by a description of several cases where a definite pathological fear was present in individuals to whom or through whom accidents occurred. Dr. Culpin said that in the investigation of accidents, the expert psychologist was seldom called in, yet his evidence would be most helpful. The fear or anxiety present in these cases was not necessarily conscious, and he quoted a case in which unconscious remorse had led to the "self-infliction" of an accident in a perfectly unconscious manner. The presence of psychoneurotic symptoms in certain workers should lead one to suspect that they are susceptible to accidents, and welfare workers could help greatly by gaining the confidence of these people and listening to their troubles. Certain characteristic cases were mentioned, such as workers who cannot bear being watched, workers who are afraid of their machines, workers who rush at their jobs, and such symptoms should suggest to the intelligent welfare worker that these subjects required helpful treatment.

Dr. H. M. VERNON (Industrial Fatigue Research Board) next dealt with the *physiological aspect* of accident prevention, and he stated that accidents could be largely prevented by maintaining the workers in the best of health and under the best factory conditions. This is somewhat difficult to prove, but certain aspects had been particularly investigated. The importance of lighting was one example. Accidents were more common in factories during the winter months when artificial lighting had to be used more than in the summer. In America three times more accidents occurred on night shifts than on day shifts in one large steel yard, although factors other than lighting probably entered into consideration. The question of fatigue was an interesting one. Does the moderate fatigue of the ordinary day's work predispose to accidents? It was found that the frequency of accidents increases gradually during the day, and another factor in this connexion was probably the boredom experienced towards the end of a day's work. Lack of experience was another potent cause of accidents, and Dr. Vernon suggested that a period of training on fool-proof machines might prevent this. The speeding-up of production increased the occurrence of accidents both because quicker movements were generally clumsier and because increased speed gave rise to increased fatigue. Temperature was another factor: a certain optimum temperature—in one factory 69°—showed a minimum occurrence of accidents. Below this cold entered into the problem and acts by decreasing manual dexterity, while excessive heat probably acts indirectly and is partly psychological. The effect of the introduction of a cooling plant at the bottom of a mine in Brazil was cited as a striking example of the importance of correct temperature. Humidity was also important, especially in coal-mines where it was usually excessive, and where the ventilation in general was shockingly bad. The comfort of the worker demands attention, for the uncomfortable worker is more liable to accidents, and in this connexion the question of clothing, the provision of changing and bathing accommodation were all discussed. Lastly, Dr. Vernon referred to the general health of the worker and its relation to accident occurrence.

A good discussion followed in which other points, such as the presence of excessive dust on the floors of factories and the state of untidiness, were mentioned as prevalent causes of accidents.

General Discussion.

At the fourth session a general discussion of the subject took place. Mr. F. N. EPWORTH opened from the employer's point of view. He welcomed the advent of the psychologist in industry, but pointed out that progress must be gradual. Welfare workers can help by preparing the ground. This is very necessary, as innovations are viewed with distrust by the employer and worker alike. With regard to the doctor in industry, Mr. Epworth gave his experiences which, he said, had been unfortunate. He complained that the medical officer often only came near a factory to collect his fees, that he never saw the work being done, and he often never saw the workers he was supposed to examine. He strongly supported the suggestion that doctors should get to know the actual conditions of factory work.

From the workers' point of view, Miss IRENE PICKUP (Messrs. Rowntree) explained that psychology was not popular with the workers. They did not understand it, and they were prejudiced against it, associating it with "speeding-up" and "increased output" and other phrases of American origin which are cordially disliked. It was difficult for the worker to understand that the psychologist came into industry to help him. Miss LIVINGSTON spoke from the welfare workers' point of view, and said that the psychologist was most welcome because he could put a scientific case for decreased hours, rest-pauses, &c., and he helped to convince the employers. She was disappointed that no mention had been made of what medical science could do for industry in the future, for example, in dealing with such conditions as anæmia, gastritis, headaches, and neurasthenia, all of which were widely prevalent in the factories. Dr. M. G. SHELDON (a works' doctor) expressed her opinion that many of the disorders mentioned above were the result of faulty habits among the young workers, and could be reduced by educational methods. Dr. CULPIN pointed out that so-called gastritis might be the physical manifestation of a neurasthenic condition, and pleaded that fears and grumbles among the workers called for just as much attention as accidents and anthrax, for example.

Numerous speakers gave interesting contributions from other points of view.

THE INTERNATIONAL DENTAL EXHIBITION.

THE International Dental Exhibition, which closes to-day (Friday), was opened at the Imperial Institute, University of London, South Kensington, on Sept. 29th, under the auspices of the Incorporated Dental Society. While the exhibition enabled the individual dental practitioner to keep himself in close touch with the latest improvements, methods, and equipment pertaining to his calling, it demonstrated at the same time the admirable response made by British firms to the demands of a specialty which plays so important a part in preserving the health of the people. During the week a series of lectures were given on various techniques and mechanical processes connected with dentistry and its practice. An important conference was also held at which the relation of the dental profession to the National Insurance Acts was discussed in all its bearings.

The Exhibits.

Two of the largest exhibits were those of Claudius Ash, Sons and Co., Ltd., 5–12, Broad-street, Golden-square, London, W., and De Trey and Co., Ltd., of London, Melbourne, Paris, Milan, and Madrid. The double cylinder "Empire" chair of the first-named firm attracted a great deal of attention. It is beautifully made and finished in a variety of enamels and coverings, with spring-balanced back and non-slip locking device on the arms, and while comfortable for the patient is equally convenient for the operator. The exhibits of this firm included a large variety of artificial teeth, instruments, and all the paraphernalia that the dentist requires in his surgery. The stall of De Trey and Co., Ltd., also attracted marked interest by reason of the fine display of their well-known Anatoform teeth specially designed to enable the practitioner to minister to the æsthetic demands of the patient while giving him or her at the same time teeth of practical utility.

Another interesting exhibit was the "Rayway" dental combination, Norman Rayne, 48, New Cavendish-street, London, W., an entirely British chair unit comprising hot-air syringe, mouth lamp, cautery, root canal dryer, electric compressor, motor converter, and other devices which add to the speed and comfort of a dentist's work; while the Raylim dental X ray outfit, X Rays, Ltd., 11, Torrington-place, London, W.C.; the Sunic X ray dental equipment, Watson and Sons, Sunic House, Kingsway, London, W.C.; the dental cabinets of C. J. Plucknett and Co., Ltd., Poland-street, London, W.; and the perfectly balanced chair made by the Dental Manufacturing Co., Ltd., Alston House, Newman-street, London, were the centres of many inquiries.

The Midland Dental Manufacturing Co., Ltd., 1, Needless-alley, Birmingham, and Mount Pleasant, Liverpool, showed an ingenious instrument called the Rahinator, designed to convey Rahinol, an antiseptic and anæsthetic, to the bur while in use. It consists of an attachment containing a small heating coil, and a detachable internal cylinder for holding the fluid, to which is screwed a fine flexible tube for conveying the fluid drop by drop. Close by, at the stall of the Birmingham Dental Supply and Manufacturing Co., were to be seen dental equipments for the surgery in large variety, while special notice was invited by the wide display of dental requisites of Gould and Co., Agol House, Mount Pleasant, Liverpool, including their "Never-Snap Bristles." Kodak, Ltd. (X Ray Department), Kingsway, London, W.C., had an attractive exhibit of their photographic material for dental radiography, and Parke, Davis and Co., 50–54, Beak-street, London W., showed a very attractive assortment of hypodermic cases for dentists and also their well-known tooth-paste Euthymol. Among other firms displaying dentifrices were Kolynos Incorporated, Chenies-street, London, W.C., whose well-known dental cream, which is entirely free from grit, has the following formula: Calcium carbonate, 21·00; soap, 25·50; thymol, 0·25; benzoic acid, 0·30; saccharine, 0·50; oil of eucalyptus, 1·75; oil of mint, 1·90; glycerine, 27·00; alcohol, 21·80; the Pepsodent Co., 42, Southwark Bridge-road, London, S.E.; and the Crown Perfumery Co., Ltd., New Bridge-street, London, E.C., who showed Corodenta for dental plates and artificial teeth, and Crown tooth paste, which has a pleasant lemon flavour.

Space does not permit us to mention the whole of the 40 or more exhibits, most of which showed merit, and indicated by comparison with previous exhibitions the steady advance of dental science and practice.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Poor-law Medical Appointments.

THERE has been for a long time grave dissatisfaction with the manner in which Poor-law medical appointments are made by local authorities. Family influences, friendships, political considerations often weigh more than professional ability. In some instances there is said to have been corruption of a grosser sort. It has been rumoured for some time that the Ministry of Local Government was considering the advisability of taking the power of appointing medical officers from the local authorities and giving it to a central appointments committee constituted mainly of representatives of the medical educational bodies. Such a plan, though undoubtedly an advance on the present system, is not approved unanimously by the medical profession, which has long demanded a national medical service with admission by competitive examination. The Ministry has now decided to try its plan in an experimental way in the Dublin Union. The affairs of that union are at present administered by paid Commissioners, the board of guardians having been temporarily suspended from its functions by the Government. The Ministry has written to the Commissioners suggesting that it would be greatly in the public interest if the Commissioners could establish a special selection board to appraise the merits, qualifications, and experience of applicants for the four vacancies for dispensary medical officers. The Commissioners accepted the suggestion, and decided to invite the registrars of University College, Dublin, of Trinity College, and of the Conjoint Board of the Royal Colleges to appoint a representative, each to act as a selection board, with the chairman of the County Dublin County Council as chairman. The profession will watch the working of this experiment with much interest.

Medical Reform.

At the summer session of the National Association of Insurance Committees, held last week in Dublin, the subject of reform in the public medical services was discussed. A report was received from a committee which had been previously appointed to inquire into the working of national health insurance and medical services generally. Among the recommendations of the committees which were adopted by the Association were the following: That the present permissive health legislation be made mandatory on local authorities; that tuberculosis be included in the schedule of infectious diseases compulsorily notifiable: that power be given to the tuberculosis medical officer of health to compulsorily isolate persons suffering from tuberculous diseases in cases where he considered isolation essential in the interest of public health, also the effective inspection of cattle in respect of bovine tuberculosis, the tuberculin test of the milk-supply, the effective inspection of cowsheds, power to committees dealing with tuberculous disease to afford preventive treatment to persons coming under their observation who, although not actually suffering from the disease, were in the opinion of the medical officer liable to contract it. Suggestions were also made for

the provision of treatment-training colonies for civilian patients whose pre-treatment occupations were especially unsuited to persons suffering from tuberculous disease and the provision of adequate housing accommodation, and the making and enforcement of regulations against overcrowding.

The committee were in favour of the abolition of the Medical Charities Act, and recommended in substitution therefor the extension of medical benefit to insured persons and their dependents, the preparation of a register of persons whose lack of means or whose occupation rendered them ineligible for inclusion in the insured medical benefit scheme, power to the local health authority to employ district nurses or enter into arrangements with existing nursing associations, and to make available the services of district nurses in connexion with the various county health schemes.

Dr. Patrick T. McArdle has been elected Master of the National Maternity Hospital, Dublin. For some years he had been Joint Master along with the late Sir Andrew Horne. He is also gynæcologist to Jervis-street Hospital.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following table gives some of the principal statistics for 1923 of four county boroughs:—

Name of county borough.	Estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Oldham.. ..	147,500	17·8	16·0	1·2	1·3	4·6	45	112	5·0
East Ham ..	146,200	19·4	9·0	1·1	1·0	1·6	25	51	3·5
Huddersfield .	111,600	15·7	12·6	1·2	1·5	2·6	39	72	6·3
Warrington ..	78,910	22·4	11·0	1·4	1·0	2·7	26	75	7·3

Oldham.

Dr. J. B. Wilkinson says the past year will be notable for the beginning of a scheme for the clearance of the largest slum area in the town—viz., Smethurst-street area. This area, which has been regarded as insanitary for 20 years, covers 4·9 acres and contains 259 houses and a population of 1425 persons. On the other hand, it is difficult to see how rapid progress can be made, as, owing to house shortage, dilapidated and unfit houses cannot be closed. No municipal houses were erected during the year and the 42 completed by private builders are all of too large a type for the artisan population. The scarcity of houses enables those who engage in the trade of letting furnished rooms to charge exorbitant rents. Dr. Wilkinson gives one example of a derelict inn, let by the owners for £40 per annum, which yields a total annual rental for so-called furnished rooms of £408. The rents for the furnished rooms are paid in advance or the tenants are turned out. "In some cases which have come to my knowledge," says Dr. Wilkinson, "the rents have had to be obtained by immorality to avoid ejectment." The depression in the cotton and iron trades has interfered with the progress of the schemes for the substitution of water-carriage for pan-closets and ashbins for ashpits, but notwithstanding adverse circumstances a considerable amount of work in repairing property and remedying defects has been carried out.

During the year the Oldham and Rochdale corporations acquired the reservoirs of the Rochdale Canal Company; Oldham's share of the purchase includes two reservoirs and 1645 acres of gathering ground, and will eventually render available for domestic use over 2 million gallons of water per day. The renovation of the sewage works has provided some work for the unemployed. About two-thirds of the conveniences in the town are waste-water closets, and the cleansing superintendent's report shows that this class of closet gives a great deal of trouble through its liability to become blocked. There were no less than 5445 blockages cleared in 1923. None of the "graded" milks is on sale in Oldham, but two firms do a large business in "cleaned, sterilised, and bottled" milk. Dr. Wilkinson draws attention to the small number of females who seek treatment at the V.D. clinic for gonorrhœa. At the Oldham Royal Infirmary clinic there were only 19 females to 140 males under treatment for this complaint during 1923, and yet, as Dr. Wilkinson says, gonorrhœa "is the origin of a very large proportion of ailments from which women suffer." Antenatal work makes slow progress. There were only 61 cases at the clinic during the year and the births in the borough numbered 2617. Midwives notified 1946 births, and sent for medical aid in 289 cases. The usual fee charged by midwives is 35*s.*, and occasionally the fee is £2.

East Ham.

Dr. W. Benton says a great deal of repairing work has been carried out at the instance of the sanitary inspectors, but that "in the Little Ilford ward many people are living under unsatisfactory conditions owing to the urgent need of further housing accommodation in the borough." East Ham has no maternity home, but the council occasionally pay for the accommodation of patients in homes at Plaistow and West Ham at the rate of 7*s.* per day. Six cases were so dealt with during 1923.

The school report indicates many needs, though Dr. Benton tells us that the pseudo-economic barrier is gradually disappearing and that the advantages of preventive and early curative treatment are becoming more generally recognised by the education committee. Dr. Benton describes the scheme which has been adopted for coördinating the municipal medical services. The committee has now decided to abolish the obsolete desks to which Dr. Benton drew attention in his 1912 report. Verminous conditions have not improved; in fact, the number of children with head vermin was greater in 1923 than in any of the three preceding years. The aural surgeon, Dr. G. C. Chubb, points out that half the ear cases are sent to him for deafness and half for discharging ears, and that among the latter group it is chiefly a question of preventing serious complications, as only a few show "marked improvement in hearing." He goes on to emphasise how much easier is prevention—by maintaining clear nasal passages and by dealing with infected adenoids and tonsils. The accommodation for the school dental clinic is again reported as very unsatisfactory and the dental staff is quite inadequate to deal with the needs of the children. Arrangements for the education of physically defective children are badly needed. Thus there were 552 such children in 1923 "for whom no adequate treatment, either in the form of an open-air school or a physically defective centre, has been carried out with the exception of the 26 children admitted to the Ogilvie School of Recovery at Clacton-on-Sea." The arrangements for dealing with mentally defective children are also inadequate.

Huddersfield.

Dr. S. G. Moore reports that 233 new houses were completed during the year, 98 by the corporation and 135 by private enterprise. Of the latter 97 were suitable for members of the artisan class. During the five years previous to 1914 the average number of new houses completed annually was 320, but during the five years preceding 1920 the number dropped to 47. The corporation have a scheme for building 1500 houses, and have built or nearly

completed 600 during the last five years. In March Mr. John McKinna, F.R.C.V.S., was appointed veterinary inspector to the corporation. Of 53 samples of milk submitted for bacteriological examination, seven caused tuberculosis in guinea-pigs. This may be an under-statement of prevalence, as 30 of the 106 guinea-pigs inoculated died from blood-poisoning before the period necessary for the development of tubercle had elapsed.

No applications for selling "graded" milk have been received. A case of mixed milk deficient in fat led to the taking of samples from individual cows in the herd. The mixed milk of the herd on Feb. 15th showed a deficiency of 6·6 per cent. of fat, and the milk of three individual cows showed deficiences of 10 per cent., 20 per cent., and 40 per cent. respectively. The matter was ultimately referred to Mr. McKinna, who took a sample of the mixed milk on May 28th, which was found to contain 4 per cent. of fat and 9·25 per cent. of non-fatty solids. Midwives attended 721 of the 1728 births alone and 530 with a doctor. In 148 of the latter the midwife summoned medical aid, and in the remaining 382 instances the doctor was engaged beforehand. Huddersfield has no antenatal clinic, but has had in operation since 1916 a voluntary system of notification of pregnancy. Each expectant mother is visited and revisited as necessary by women doctors employed by the corporation, and the same practice is observed with notified births. The notifications of pregnancy received in 1923 numbered 579, or about one-third of the total births. Three home helps are employed to take over the household duties in the homes of maternity cases, and also two charwomen for washing and heavy cleaning. One pavilion of the Mill Hill Sanatorium for Infectious Diseases is equipped as a maternity ward of 12 beds, and receives cases when the home accommodation is unsuitable for the confinement.

Warrington.

Dr. G. W. N. Joseph tells us that the housing subcommittee select their tenants almost entirely on the urgency of the hygienic conditions under which the applicants are living. At the end of 1923 the waiting list of applicants numbered 1575, including 738 living in overcrowded houses and 171 mostly employed in Warrington, but unable to live there owing to the house shortage. Dr. Joseph gives particulars of the weekly rentals of the corporation houses:—

Wooden huts, with two bedrooms, kitchen, scullery with copper, larder, coal store, and w.c.; 20 at 5*s.* 6*d.* + 4*s.* rates; 20 somewhat smaller at 5*s.* + 2*s.* 4*d.*

Six concrete houses (on Dorman Long system—cost £850 each) at 9*s.* + 6*s.* 1*d.* rates. These houses have sitting-room, kitchen, scullery, larder, coal place, and w.c. on ground floor, and three bedrooms and a bathroom on first floor.

Brick houses: 39 "Type B" with accommodation similar to Dorman Long houses, 9*s.* 6*d.* + 7*s.* 4*d.* rates; 17 "Type A"—i.e., without the sitting-room, at 8*s.* + 6*s.* 1*d.* rates; 73 "Type A"—19 end houses at 13*s.* 11*d.*, and 54 inner houses at 12*s.* 11*d.*, both inclusive of rates; 12 "Type A," completed last year, at 12*s.* 11*d.* inclusive.

There are still a considerable number of houses in the borough which ought to, but cannot, be closed. Seventy-two tenants of corporation houses have received permission to take lodgers. Much irritation is provoked among homeless people by the sight of empty houses retained empty "for sale with vacant possession."

The accommodation at the maternity home was much appreciated. There were 256 admissions, and additional accommodation is needed. Three Cæsarean sections were performed; all the mothers made good recoveries and there were two living children. Provision is needed for the treatment of surgical tuberculosis. The new recreation hut at the sanatorium for pulmonary tuberculosis was completed during the year, and has been provided with a first-rate billiard table, a piano, a gramophone, and seating accommodation through the generosity of Lady Greenall. Ten patients were treated with tuberculin, but the results were not encouraging. Patients who give a history of chronic nasal catarrh are inoculated with stock anti-catarrh vaccine. Several tuberculous abscesses have been successfully treated by aspiration, injection, and exposure to sunlight. Dental treatment is only available for ex-Service men. Of 84 samples of mixed milk, representing the milk of 1200 cows, no less than 10 were found to contain tubercle bacilli. As the result of following up, eight cows which were giving tuberculous milk were found and dealt with.

SCHOOL MEDICAL SERVICE.

Leicestershire.

Dr. T. Robinson reports that the elementary school population here is about 36,000, and of these between ten and eleven thousand were medically examined, and 11·6 per cent. were found to require treatment. Dr. J. B. Dalton, the assistant school medical officer, reports that the number of children with enlarged tonsils and adenoids has decreased. He finds that parents questioned six months after the operation are of opinion, with few exceptions, that there is an improvement in the "physique and alertness" of the child. From the teacher's point of view the results have, on the whole, not come up to expectation. No numbers are given, but "the following up of cases of tonsils and adenoids operated on shows (*a*) general physique is first to benefit by the removal of these defects, (*b*) mental capacity is slower to benefit and is not so marked as in the case of bodily physique."

Northampton.

The borough medical officer of health here is now school medical officer in charge with one assistant and a whole-time school dentist, who acts after school hours as dental officer to the maternity and child welfare section. Most of the work dealt with during the year by the public health department, owing to the changes in the staff, has been of a routine character. Dr. J. D. McCrindle urges the necessity for open-air education. "There are many debilitated, anæmic children, often under-nourished, who readily fall victims to subsequent tuberculosis or other communicable disease who can get little real education in the ordinary school, and, apart from the effect on their health, public money is wasted in the attempt to educate them thus." Dr. J. H. Mason, assistant school medical officer, pleads for special classes for dull and backward children for whom at present no provision is made. He also deplores the tendency to widen the scope of special schools for mentally defective children by admitting low grades of mental defect. Altogether, between five and six thousand children were examined; 3000 of these were routine examinations, and nearly 19 per cent. required treatment for physical defects apart from dental condition.

Northamptonshire.

The school medical work was much interrupted here owing to changes in the staff. Dr. C. E. Paget, who succeeded Dr. J. H. Mason as school medical officer in May, 1923, reports that the result of the appointment of a whole-time demonstrator of physical training is becoming apparent in the improvement and modernisation of the physical training methods now in use in both day and evening schools. Classes for teachers are being held throughout the county. The total number of children examined in the code groups was 2420 of a total school population of 27,646. Cleanliness amongst the children seems to have increased. Dental defect appears from the figures to have increased, but the group examined was aged 6 to 8 years, always a period when dental decay is more prevalent.

Scarborough.

It is pleasant to record that Seamer-road Nursery School is again recognised by the Board of Education. While this school was receiving no grant certain kind individuals in Scarborough supported it entirely out

of their own pockets. The number of children on the school register at Seamer-road is 62. At the Friarage nursery class there are 74 children. Dr. C. J. W. Tatham is firmly convinced of the real value of these schools, and suggests that though in their present form they are expensive, the nursery school ought to be developed. The school clinic is utilised twice a week for infant and child welfare work, and the school medical inspector is in attendance. The total number of attendances during the year was 3498. Ringworm of the scalp occurred in 44 children, as against 35 in 1922, a larger number than is common in other areas with a similar school population. Dr. Tatham suggests that possibly ringworm attacks fair-haired oftener than dark-haired children, and that this larger number is due to the higher percentage of fair-haired children on the north-east coast than in other parts of England. Of children recommended for dental treatment 82 per cent. obtained it. There is no doubt that the high percentage of clean mouths got in this way will materially reduce the number of victims of toxic diseases, such as rheumatism, in later life.

Stockport.

Altogether 7398 children were examined, and of the 4759 who came under the code groups 25·6 per cent. were found to require medical treatment. At the central school clinic, open daily, and a branch clinic, open once a week, nearly 12,000 attendances were made by just over 3000 children. Children in Stockport are recommended for free meals by the school teachers, attendance officers, and medical officers. The children attend for breakfast and dinner five days a week, on Saturday they have dinner only. The average number of children attending the leading centres for meals was 80. In 1922 it was 103. Dr. A. G. Jenner reports that the food is appetising and much appreciated by the children; the cooking and serving are also good.

Torquay.

A marked reduction in the amount of uncleanliness, with a similar decrease in the number of cases of skin disease, is recorded. Dr. T. Dunlop states: "For the first time since the war these diseases would now seem to be completely under control." There were 42 cases of ringworm, 36 of these being scalp affections. These were treated to such purpose with calomel and iodine that only four cases remained on the books at the end of the year. Attendances were not lost, as all those children attended school wearing washable caps provided by the authority. Arrangements have now been made for ringworm cases to obtain X ray treatment at the Torbay Hospital when necessary. A register of all dull and backward children is kept, and the children carefully examined as to mental and physical condition. It is unfortunate that for financial reasons the very necessary scheme for starting a class for these children at the open-air school has had to be abandoned. Dr. Dunlop gives credit to each of his assistants for their separate contributions which comprise the full annual report.

Warwickshire.

Much useful work is being done in the 31 voluntary infant welfare centres. During the year 23,435 attendances of children between 1 and 5 years of age were made at these centres, and a total of 17,762 examinations of school-children were made. The services of an additional dentist have been secured, and it is now hoped that dental treatment will be available for all children of from 6 to 8 years of age. Medical inspection during the year has revealed the necessity for an immediate increase in the accommodation in many of the schools in the more populous parts of the country. The strength of the health visiting staff was reduced by two in 1920, and Dr. A. Hamilton Wood suggests that a return to the former strength of 17 instead of 15 as at present is desirable. The standard of physical training in this county has improved largely owing to the increased interest among teachers in this branch of the work. Mr. P. R. Marsh, the county organiser of physical education, refers to the unsuitable clothing and footgear worn by so many of the children during games and drill. It would be more pleasant if this report were published in a form less unwieldy.

West Riding of Yorkshire.

The area of the West Riding for purposes of elementary education consists of over a million and a half acres, and has a school population of nearly 193,000. Dr. J. R. Kaye says: "The school population is altering slightly in distribution. The development of the coalfields around Doncaster is causing an influx of population to this district, and throwing some strain on existing schools." He is concerned, too, about the housing needs of this area, which are not being adequately met. Another matter which is also causing great concern is the inadequacy of specialist staff here. "The growing arrears of children who have been recommended for further examination of the eyes with a view to getting glasses cannot be contemplated with equanimity . . . . the problem facing parents of these children is of some magnitude; railway fares and refreshment, loss of a day, cost of getting someone to look after the children remaining at home, and if, as not infrequently happens, the examination is not completed and the prescription for glasses issued on the first visit there it has to be repeated." Truly, the penalties for living in the rural districts of the West Riding are absurdly heavy. Dental treatment also in many districts is unavailable. Although it is evident that the demand for these amenities may require stimulating in a county where "the head teacher instituted a sewing class in which the girls under the head teacher's dictation replaced safety-pins and other emergency devices on their own clothes by buttons, tapes, or hooks-and-eyes, and the parents took them off and sent the girls back to school without them!" An investigation was made by Dr. G. W. Fleming into the question of malnutrition in the Wakefield area. He worked on a weight and height ratio. Taking 2000 children he found that 30·8 per cent. were 10 per cent. or more below the average. A fairly large percentage was undersized while retaining the weight-height ratio. The malnutrition found is attributed largely to an ill-balanced diet which is deficient above all in accessory food factors or vitamins. The report also contains an interesting article on "arrested caries." It is unfortunate that the general medical profession in the West Riding coöperates so little in this preventive work. Indeed, occasionally the school medical service has had to face not only a lack of coöperation, but an attitude which Dr. Kaye describes by stating that "it would be going too far to suggest it was wilful obstruction."

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 20TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 53; scarlet fever, 1688; diphtheria, 886; enteric fever, 103; pneumonia, 419; puerperal fever, 38; cerebro-spinal, fever 8; acute poliomyelitis, 29; acute polio-encephalitis, 3; encephalitis lethargica, 39; typhus fever, 1; trench fever, 1; dysentery, 5; ophthalmia neonatorum, 132. There were no cases of cholera or plague notified during the week. The case of typhus was again from St. Helens.

Deaths.—In the aggregate of great towns, including London, there were 6 deaths from enteric fever, none from small-pox, 8 from scarlet fever, 21 from diphtheria, 7 from measles, 21 from influenza. In London itself the diphtheria deaths numbered 8 and the deaths from infantile diarrhœa 28. Another death from typhus was registered from St. Helens.

METROPOLITAN HOSPITAL.—The Metropolitan Hospital, Kingsland-road, which has 137 beds and ministers to the needs of one of London's poorest districts, is making an appeal for £50,000 in order to build a nurses' home and improve the casualty department. The Lord Mayor, Sir Louis Newton, President of the hospital, and Lord Howard de Walden, chairman, are organising the appeal, and special efforts will be made on behalf of the hospital in the district in which the hospital is situated, in the City, and in the West End.

Correspondence.

"Audi alteram partem."

WORKING FOR PROMOTION.

To the Editor of THE LANCET.

SIR,—The Director-General of the Army Medical Services is Sir William Leishman, professionally a bacteriologist, whose name has long been in the minds and mouths of the profession as the author of the Leishman stain and the discoverer of leishmaniasis, widespread throughout the world but unrealised until, like America, it was discovered. The Surgeon-General of the United States Navy is also a bacteriologist, Rear-Admiral E. R. Stitt, whose handbook is on the working bench of every laboratory. Thirty years ago we may fairly imagine these two young officers hard at work and indignantly commenting to their intimates on the neglect—opposition maybe—of superiors who could not realise the importance of the new science these young officers were learning and hoping to turn to profit for the Service. They did not sulk or throw up their hands and cease work as men with less conviction have been known to do. They stuck to their guns, their guns saved them, and now everything is in their power. There are junior officers now who feel neglected. Many of them have come from medical schools, where their talent soon began to shine out in that small, almost home-like area. They are now in a world which takes people to its heart slowly. Many of the juniors can dress their windows well, but which of them has the well-stored warehouse and can go on delivering the goods? It is for him that the Services are continually on the search. Who can say whether directors-general, 30 years hence, will be chosen from administrators, bacteriologists, operating surgeons, electric specialists, or some other branch, perhaps now unknown? One thing alone is certain. These prizes will not be for men who have drifted. Advancement will come to the man who does the work his abilities make him think the most important, does it thoroughly, does it hard, and does it long. His qualities must be proved in the furnace of affliction, or at least of strenuous opposition. But good work, done by an unselfish man with sympathy and helpfulness to those who are his associates, will rarely fail of its reward.

I am, Sir, yours faithfully,

Sept. 29th, 1924. OLD FOGEY.

THE TISSUE PATHOLOGIST.

To the Editor of THE LANCET.

SIR,—The letter of Dr. E. H. Shaw in your last issue reminds some of us of the days when the keenest minds amongst the young consultants were interested in the microscopical appearances of diseased tissues. Many improvements have taken place since then, both in the preparation and interpretation of histological sections, but it is still difficult sometimes to distinguish between tuberculous and syphilitic changes or to estimate the various degrees of malignancy presented by tumours which are on the border-line. The suggestion, therefore, of preserving, classifying, and cataloguing sections of doubtful nature is very valuable if it could be put in practice. It does not seem likely that any of the corporated bodies would devote time, space, or money to such an object, but it could well be begun in a little way as a beginning if someone would undertake the initial expense of a small laboratory attached preferably to one of the research associations which are at present doing good work.

Yours faithfully,

D'ARCY POWER.

Chandos-street, Cavendish-square, W., Sept. 29th, 1924.

DENTAL DRESSERS.

To the Editor of THE LANCET.

SIR,—Your favourable endorsement of the Derbyshire dental dresser scheme, which appears in THE LANCET for Sept. 20th, will be read with mixed feelings by many of your dental readers. For my own part I am definitely opposed to this scheme, and I know that many other dentists are of the same view, while the British Dental Association has always opposed the proposals of Dr. Barwise.

The scheme is put forward chiefly on the ground that there is a shortage of dentists. Is this a fact? As a teacher at a dental school I am in touch with a large number of recently qualified dentists, and I know that for every dental appointment, both part-time and permanent, there are large numbers of fully qualified applicants. This is the case even when the salary offered is below the standard which the British Dental Association regards as the minimum, and the advertisements for that reason are not accepted by the *British Dental Journal*. This does not look like a shortage of dentists. I suspect that the real reason is that the local authorities are unwilling to face the expenditure necessary to provide adequate treatment by qualified dentists, for in the abstract of the report of the school medical officer for Derbyshire there is the significant statement that "we cannot afford to employ dentists to do the necessary work, and if we could they are not available." With the assumption that there are not enough dentists available I have dealt. But even if the number of dentists increased, is there any likelihood that the Derbyshire authorities, or for that matter any other public bodies, would pay for the services of qualified dentists if they can get the work done by dental dressers under the supervision of a few dentists? It seems to me very evident that though this scheme is put forward under the specious guise of a temporary expedient, once it becomes established there is little chance of a reversion to the principle that dental work should only be done by qualified dentists, even although the number of the latter should be largely increased. In these days economy is a popular appeal, but cheap dentistry, like cheap medicine, is neither good for the dental profession nor for the public whose interests it exists to serve.

It is stated in the report of the Derbyshire scheme that there is no risk that these dental dressers might form a centre for the creation of a number of unregistered practitioners. When the scheme was first evolved by Dr. Barwise before the passing of the Dentists Act, 1921, the British Dental Association strongly opposed it partly on the grounds that it might provide a training ground for unregistered practitioners under public authorities. The passage of the Act has removed this danger for the present. It is, however, very significant that when the small amending Act of 1923 was passed conceding a reduction in the statutory age to certain ex-Service men, an attempt was made to introduce an amendment admitting these dental dressers to the prescribed examination established by the Dentists Act as an easy route to registration for those individuals who were practising without being registered. Can we be certain, therefore, that the danger has passed? In the event of any further amendments to the Act it is highly probable that were there in existence a large number of dental dressers carrying out work of the nature advocated by Dr. Barwise, that strong pressure would be brought to give them a legal status.

Already under the Mond scheme (Circular 1279) the Ministry of Health, in agreement with the Dental Board, has sanctioned the employment of dental nurses whose work is limited to cleaning and polishing teeth, applying or removing temporary dressings, and charting work under the direct supervision of the dental officer. But Dr. Barwise is not satisfied with this, and says bluntly that the employment of dental dressers under these conditions "is of no use to us." He presses strongly for permission for dental dressers

to inspect and chart the mouth, to extract and treat temporary teeth, and to fill first permanent molars. In spite of the radiographs of fillings done by dental dressers and the testimony of various dentists, I am not convinced that this work can be satisfactorily performed as a routine measure by unqualified dressers. As dental surgeon to a large children's hospital, I am fully acquainted with the problems connected with the dental treatment of children, and in my opinion there is no branch of dentistry which calls for so much judgment and skill. Extractions even of temporary teeth and roots should in most cases be done under a local or general anæsthetic. Is it suggested that the dresser should also do this? The filling of first permanent molars is a very important part of a school dentist's work, and yet it is suggested that this should be delegated to dental dressers "of matriculation standard" under the supervision, for what it is worth, of a qualified dentist. This is, indeed, putting back the clock of dental progress with a vengeance.

I feel certain that the dental profession as a whole will oppose these proposals of Dr. Barwise, and I trust that the Dental Board will not give their sanction to a step which I believe to be detrimental to the best interests of the public dental service.

I am, Sir, yours faithfully,

Wimpole-street, W., Sept. 24th, 1924. A. T. PITTS.

*** Mr. Pitts's reasonable claim that the dental profession can and should take over the whole responsibility for the teeth of school-children will be read with unmixed feelings of approval. At present the absence of such care in county areas is a menace to the health of the coming generation. For this reason it seems to us that any temporary expedient which is achieving good results should be regarded with indulgence.—ED. L.

CHLORIDE METABOLISM IN RADIATION TREATMENT.

To the Editor of THE LANCET.

SIR,—The paper on the above subject by Prof. A. T. Cameron and Dr. J. C. McMillan in your issue of August 23rd makes several references to work of ours recently published by you (THE LANCET, 1924, i., 533), and we should be glad if you would allow us to make a few comments.

1. Cameron and McMillan make no reference to the normal variations in chloride metabolism, and they give the chloride excretion in their cases only for one or two days before the X ray treatment was commenced. Cases examined by us, in some instances for weeks before treatment was commenced, showed very wide variations in chloride excretion.

2. Three out of their five detailed cases were patients with gastric cancer. If the notable deficiency of gastric HCl in these cases be considered, it appears to us evident that the general Cl metabolism in similar untreated cases, or in such patients for a considerable time before treatment, would need to be analysed first before any reliable general deductions could be drawn as to the effect of radiation.

3. Their first two cases show very slight changes in chloride excretion—quite within the normal range of variation. Their third case had nausea but no sickness after salt feeding was started. The chloride excretion, however, remained low up to the twelfth day of such feeding. As the patient died three weeks after the last treatment it appears to us that no conclusions of value can be drawn from such a patient's terminal metabolic reactions. Their fourth patient had salt feeding, and no salt retention, and no sickness (slight nausea). This case would appear to us to be useful only possibly as a control. Their fifth patient frequently vomited after meals before the treatment began. (No analyses are given of the urine before the treatment.) He was worse after the second treatment; salt feeding was started, and was followed after five days by a sudden large chlorine excretion. That the coincident improvement in his general condition was due to the salt feeding, as the authors conclude, does not seem to us to be warranted, as improvement in any case might be expected a week after the last X ray treatment. Many more control examinations would seem to us to be necessary before the authors' conclusions can be substantiated.

4. They conclude, on the basis of urinary analyses, that there is "no production of acidosis." Blood analyses are essential for hydrogen ion and alkali reserve estimations. The authors do not refer to the valuable work of Whipple and others on this point, which our work seemed to confirm.

5. Our work was mainly done in the winter and spring of 1922–23, the literature was summarised to July, 1923, and our paper was submitted for publication before Cori and Pucher's paper on chloride retention had appeared. Hence no reference to it was made.

6. As to details of the X ray treatment given in our cases, where the word "intensive" was used that implied, as is generally understood, radiation with a tube activated at 160–200 kilovolts, and filtered with at least 0·5 mm. zinc or copper, and applied so as to administer approximately a "skin unit dose" throughout the area of evident or probable disease, including the associated lymphatics. We felt that full details of the 12 or so factors involved in X ray treatment would occupy more space than was justified in a non-technical paper. The X ray details given by Cameron and McMillan are indefinite. (What is meant by a "13 cm. port"?) The necessary factors are variable, or are not given. In considering metabolic changes the *essential* factor must be the "volume-dose," or "body-dose" as it has been called, the total of absorbed radiation. To give the dosage in electrical terms as milliampère hours, or otherwise indirectly as they do (e.g., 100 k.v. 4 mm. Al filter) gives neither an estimate of the superficial nor the depth intensities, from which the "volume-dose" (other factors also being considered) could be calculated. Correlation between "volume-dose" and metabolic changes would have so greatly enlarged the scope of our investigation (which was already taxing the limited resources of the biochemical staff to its utmost) that we had to leave this for future investigation by ourselves or others, and on a larger series of cases.—We are, Sir, yours faithfully,

E. C. DODDS.
J. H. DOUGLAS WEBSTER.

Middlesex Hospital, W., Sept. 24th, 1924.

THE DIAGNOSIS OF A HEALTHY HEART.

To the Editor of THE LANCET.

SIR,—Dr. A. Graham-Stewart's letter in your issue of Sept. 20th seems to raise the old question of the correct definition of the term "functional." Taking simple paroxysmal tachycardia—Dr. Parkinson expressly excludes auricular flutter and fibrillation—to be merely a succession of extra-systoles either auricular or ventricular, a disorder in function of the heart would appear to be the best description possible for the condition. That extra-systoles themselves may have a prognostic significance when due to the irritability of fatigue in the presence of a definite cardiac lesion does not gainsay the fact that most people who suffer from them have nothing else to suggest heart disease. As Dr. Parkinson says, "These are not in themselves an index of heart disease, although they may occur along with it." Surely the same should be said of paroxysmal tachycardia, with, however, this additional factor in prognosis: that it does not do any heart good to beat for long at a rate of over 200. No one, of course, would apply the term "functional" to this condition in the sense that it is used by some neurologists in cases of hysteria and allied disorders.

I am, Sir, yours faithfully,

Harrogate, Sept. 24th, 1924. C. W. CURTIS BAIN.

CANCER AND SOME OF ITS SIGNIFICANT CHEMICAL REACTIONS.

To the Editor of THE LANCET.

SIR,—Cancer research during the past few years has been pursued with great diligence and has received considerable impetus from a number of different sources. In view of Sir George Beatson's most interesting letter, published in your columns of August 23rd, and also A. N. Currie's article on the Fat of Adipose Tissue in Malignant Disease,[1] a short account of the recent observations made in the Physiological Laboratory of King's College may not be out of place.

The large amount of yellow fat in the neighbourhood of a cancerous growth—e.g., in scirrhus growths, penetrating the tumour itself and incorporated with it, as pointed out by Beatson—is self-evident to those in the habit of dealing with such material. Further, Beatson[2] showed that a large percentage of this fat was unsaturated and suggested that the cause of the unsaturation was a local enzyme, which thus rendered the fat an easier pabulum for the growth. Currie, in his paper referred to above, shows that extractions of fat from healthy tissues have an average iodine value of 60·8, while those from fat adjacent to carcinoma have a value of 74·4. He also gives a feasible explanation of an oxidase-reductase system, which can readily be shown to exist in the connective tissue. This is in accordance with the well-known facts that adipose tissue is rich in a fat-splitting enzyme and in catalase.

Shaw-Mackenzie has shown that tissue lipolysis and utilisation of fats is defective in cancer. Furthermore, he suggested, so long ago as 1910, that the fatty acids, or their sodium salts, are important factors in the protective processes or induced resistance of the body. Rosenheim and Shaw-Mackenzie[3] showed that sodium oleate and other hæmolytic substances have the power of increasing lipolytic action: while cholesterol, on the other hand, inhibits the action of sodium oleate and other activators of lipase. Thus sodium oleate may not only be protective in itself, but may hold in check the inhibitory action of cholesterol in the body.

Whether the lipolytic deficiency, or the fact that the oxidase-reductase system is out of gear, or both these factors acting concurrently be the cause of the accumulated unsaturated fatty material in cancer is a question which further research will answer. That the oxidase-reductase system, a theory of whose mechanism Currie has outlined, plays by no means a negligible part receives support from the results of workers in widely divergent fields. Glutathione, discovered by Hopkins in 1921, and isolated by him from yeast cells and from various animal tissues, by virtue of its chemical structure, is a means of transport of hydrogen within the cell. Hopkins has shown that oxidation of unsaturated fats is readily catalysed by glutathione, and it can easily be shown, as Currie has done, that the tissues contain an oxidase. Further, von Fürth found in his work on the oil in the seeds of the sunflower and castor-oil plant that the changes which occur consist of an increase in saponification value and a lowering of the iodine value. The increase in saponification value indicates the formation of lower fatty acids from the higher ones: and lowering of the iodine value shows that the ethylene linkages have been destroyed during cleavage. A similar kind of action to that just described in the case of seeds takes place normally in the liver of a healthy individual. The higher fatty acids—e.g., stearic acid—are desaturated and cleavage occurs at the weak spot—viz., the ethylene linkage, giving rise to simpler fatty acids. Hence, it seems obvious that in cancer these reactions of desaturation and cleavage are in some way inhibited.

But the excess of unsaturation cannot wholly be explained in this manner. It has long been known that excess of lecithin occurs in the cancer cell. In addition to lecithin, the carcinoma cells are rich in cholesterol. Wacker has pointed out that the fat deposits in the subcutaneous tissues and mesenteries of persons suffering from carcinoma is no less than 66 per cent. greater in cholesterol content than the fatty deposits in normal persons. The iodine value of cholesterol is exceedingly high, and the large increase in iodine value which Beatson and also Currie have reported and which I, in collaboration with Shaw-Mackenzie, have also noted is probably due in no small part to increased cholesterol content. This increase in cholesterol content is not only found in the carcinoma cell and the neighbourhood of the cancerous growth, but extends to the serum of cancer patients. The increase in cholesterol in the serum is quite marked and has been exhibited in every case I have examined. Also preliminary qualitative experiments of bromine absorption in chloroform extracts of the serum indicate the increased unsaturation. This would be expected in virtue of the fact that cholesterol contains an ethylene linkage.

For the last 14 years Shaw-Mackenzie[4] has been working in this laboratory on the sera-diagnosis of cancer, and recently I have been inquiring into the chemical nature of the tests he has elaborated. Although, as yet, I have not succeeded in elucidating all the chemical factors, I am satisfied that there is evidence of increase of cholesterol in the serum of carcinomatous patients. It is not claimed that this is absolutely specific for cancer, but that it is sufficiently so to be of diagnostic value. It is not for me to discuss this aspect of the problem, but the foregoing evidence will justify the statement that there is considerable alteration in the metabolism of fats and lipoids occurring in the blood and tissues in cases of carcinoma. It must, however, be remembered that this increase in cholesterol may be primary, or that it may be secondary to the carcinomatous state, but as yet there exists no evidence that I know of pointing in any special direction, and unfortunately, it is a subject in which it is extremely easy to formulate hypotheses.

I am, Sir, yours faithfully,

H. GORDON REEVES, M.Sc., A.I.C.,
Department of Physiology, King's College, London.

Sept. 17th, 1924.

[1] Jour. Path. and Bact., 1922, xxv., 214.
[2] THE LANCET, 1911, i., 1560.
[3] Jour. Physiol., 1910, xl., 8, 12.

METASTATIC GAS GANGRENE.

To the Editor of THE LANCET.

SIR,—I was greatly interested in the case of metastatic gas gangrene reported by Mr. J. R. Learmonth in THE LANCET of Sept. 27th. About a year ago I had a somewhat similar case which I think is worth recording.

The patient was a male, aged 47, who had suffered from symptoms of duodenal ulcer for a considerable period. Operation was ultimately accepted by the patient after two severe hæmorrhages had occurred.

On opening the abdomen a large duodenal ulcer could be felt on the posterior surface of the upper half of the second part of the duodenum. The tip of the finger could be inserted with ease into the crater of the ulcer by invaginating the anterior wall of the duodenum. Posterior gastro-enterostomy was performed with some difficulty as the omenta were very fatty and the stomach small and high up. A rather badly damaged appendix was removed at the same time. Clamps were used in the anastomosis, but no undue traumatism occurred. For two days after the operation the patient was perfectly comfortable with no symptoms at all to cause the slightest anxiety; indeed, he promised to have a smoother post-operative convalescence than usual.

On the third day, about 56 hours after operation, he complained of a tight feeling in the right side of the chest, and two hours afterwards had a severe rigor. An examination of the chest revealed nothing at all. The temperature now commenced to swing and the pulse-rate to accelerate, and on the morning of the fourth day I found a small dusky area about the size of a sixpence on the front of the chest wall at about the level of the fourth costal cartilage and surrounding this a small area of slightly œdematous skin in which distinct crepitation could be obtained. Gas gangrene was at once suspected and with a syringe a few drops of serum were withdrawn in which the *B. welchii* could be

[4] THE LANCET, 1922, ii., 759.

demonstrated with ease. The area of œdema and discoloration rapidly increased in size and in 24 hours occupied a considerable area on the front of the chest. The abdominal wound remained clean and sweet throughout. The symptoms of intense toxæmia increased rapidly and in six and a half days from the operation the patient died, retaining his mental faculties until the end.

This complication of gastro-enterostomy was quite unknown to me and caused me much heart-searching in an attempt to explain its occurrence. Unfortunately the case occurred in private practice and no autopsy was allowed. The wound remained perfectly sound throughout, and I do not think the infection came from this source. The catgut used was tested and found sterile. No abrasion was present on the patient to allow of the entry of the organisms. I was forced to the conclusion that the infection came from the intestinal canal where the bacillus has a normal habitat. Three portals of entry to the blood-stream are available if this is the case. First, the cut edges of stomach or duodenum at the anastomosis; secondly, from gut injured in the operation—e.g., by clamps—the organisms entering through an abrasion of the mucosa; thirdly, from the ulcer itself. I think the last alternative is the most likely in this case. The ulcer being injured slightly by the manipulation it received during investigation organisms could gain access to veins in its floor. Infection of the retro-duodenal veins thus occurring widespread infection by venous connexions is possible.

I am, Sir, yours faithfully,

B. T. ROSE, Ch.M., F.R.C.S. Eng. & Edin.

Birmingham, Sept. 27th, 1924.

KING'S COLLEGE HOSPITAL.

SCHOOL OF DENTAL SURGERY.

To the Editor of THE LANCET.

SIR,—I notice that in the Students' Guide—Session 1924–25, printed in THE LANCET of Sept. 27th, no mention is made of the school of dental surgery at this hospital. The new school was opened last November by the Rt. Hon. F. Dyke Acland, M.P., Chairman of the Dental Board. I enclose a calendar of the school showing the requirements for admission. Communications should be addressed to the Secretary at the Medical School, King's College Hospital, Denmark Hill, London, S.E. 5.

I am, Sir, yours faithfully,

Sept. 29th, 1924. H. WILLOUGHBY LYLE, Dean.

HOP DERMATITIS.

To the Editor of THE LANCET.

SIR,—Following on the series of cases of hop dermatitis described by Dr. W. J. O'Donovan in THE LANCET of Sept. 20th, the notes of this case may be of interest.

Mrs. A. P., aged 40, attended the casualty department of the Miller Hospital, Greenwich-road, London, S.E., on Sept. 19th. A week after commencing hop-picking in Kent she developed a rash on her face, hands, and legs, and simultaneously her eyelids had suddenly become swollen. On examination a few days later there was still considerable œdema of the eyelids and a papular rash on the face and neck with an erythematous base, the rash causing a good deal of itching. On the backs of the fingers, hands, and wrists the rash had been at first papular, later becoming vesicular and pustular, and finally had formed crusts. Many weeping areas were present where the vesicles had been scratched. On the legs, however, the eruption was different, appearing on the anterior aspect of the leg as purpuric spots up to 1½ inches in diameter, round or with crescentic edges when several smaller patches had become confluent. There was a considerable amount of tenderness in these areas.

This case differs from those reported by Dr. O'Donovan in two respects: (1) The presence of a purpuric rash on the legs; (2) though the patient had been hop-picking in previous seasons, she had never before suffered any similar condition.

I am, Sir, yours faithfully,

C. J. STREICH, M.B. Adelaide, M.R.C.P. Lond.,

Sept. 29th. House Physician, Miller Hospital, Greenwich.

EPSOM COLLEGE REGISTER.

To the Editor of THE LANCET.

SIR,—Particulars for a revised edition of the Register are now being collected. Will those who have received forms kindly fill them in and return them to the sub-editors at once? Any old Epsomians who have not received forms should send their address to me without delay. I am, Sir, yours faithfully,

7, The Avenue, Beckenham, Sept. 27th. H. F. LEE.

REPRESSION OF PAINFUL MEMORIES.

To the Editor of THE LANCET.

SIR,—I venture to suggest an explanation of the process by which painful memories are repressed—i.e., memories of painful experiences which have at some period of life (usually childhood) occurred to patients, and of which they were, of course, consciously aware. The explanation is based partly on observation on myself, partly on observation of a number of cases of war shock, and partly on the experiences of many friends and acquaintances whom I have questioned.

First, as regards my own personal experience. During the war, like many others, I underwent an experience which caused me intense mental suffering. On examining the course of mental events which followed this, I found that if anything occurred to remind me of the event in question, the immediate result was not the revival of the memory of the event itself, but the uprising of the same emotion of horror which it had originally caused, and that the memory of the event arose afterwards. Sometimes quite an appreciable interval separated the occurrence of the emotion from the rise of the memory—I could not bear to think of the latter and by an intense voluntary effort managed to drive it out of my mind and to think of something else. Within 48 hours a new phase commenced. When the emotion arose I was aware at once the memory would almost immediately arise. The occurrence of the emotion, in fact, acted as a danger signal, and I found that I instantly made a tremendous effort to prevent the rising of the memory, and to refuse to think of it. It was just like knowing that a repulsive picture was hanging on the wall, and refusing to look at it. In a very short time I found that I was able by this effort to hold the memory at bay, and so temporarily to repress it. The effort to repress afterwards followed with great regularity each time the motion occurred—so regularly and certainly that it became, I believe, a true psychical reflex act, and was always, I think, successful.

In a number of cases of war shock I found the same process carried out. I used to ask these soldier patients: "What happens when you are reminded of your horrible war experiences? I suppose they come before you very vividly." The answer was almost invariably, "Oh no, Sir, I feel just awful, but I never dare think of them," or words to that effect. The emotion clearly arose, but an immediate voluntary effort prevented the rise of the memory and, as in my own case, effectually locked it out. It will be noticed that these subjects were able to hold the memory at bay simply because they were warned of its approach by the emotion which preceded it. I have questioned numbers of people, and found that very many could recall some instance where the emotion preceded the occurrence of a painful memory.

I believe that we may state the following as a general law: "If the emotion caused by a painful experience is sufficiently strong, it always arises before the memory of the experience itself, when the subject is reminded of the latter." It appears to me that this law is responsible for the whole of the process of repression, and for the subsequent unpleasant sequelæ. In children (who are, of course, especially liable to repress painful memories) exactly the same chain of events, I believe, takes place when they are reminded of a painful or terrifying experience. The emotion arises first—acting as a danger signal—

and the memory is repulsed and held at bay just as in adults. But children are engaged in making every voluntary action which is often repeated automatic if they can, and what was at first a voluntary conscious act of repression, in their case rapidly becomes an unconscious and automatic one. The result of this process in the after-life of the child seems a fairly obvious one. If anything occurs to remind him of his painful experience, the emotion immediately arises, and at once causes the automatic repression of the memory which threatens to arise. The result is that the unfortunate individual is seized by some painful and often agonising emotion, which he is totally unable even to attempt to resist or combat, since he is utterly unconscious of its cause.

It is these emotions which form the symptoms induced by a repressed memory, and they may be, and often are, extremely serious. One of the commonest emotions met with in these cases is fear, and this alone may of itself give rise to other grave symptoms. I have seen the emotion of fear caused by a repression actually induce attacks of true epilepsy and catalepsy, and the number of different symptoms met with in various patients who suffer from repression is almost legion. But if the patient can be made to recall the actual painful experience (and this can often be done by means of even light hypnosis, or by some psycho-analytic procedure) the symptoms caused by the repressed memory vanish at once and permanently.

One is often asked, "Why does the recovery of the repressed memory cure the symptoms?" I think the question is better put in this form: "Why do recalled painful memories do us no harm?" It is certain that most of us can recall many painful memories, and that these memories produce no pathological effects. I conclude that remembered painful memories are harmless, probably, I imagine, because we can bring our judgment to bear on them. When the patient recalls the memory which caused his symptoms, it begins at once to behave like the rest of his remembered painful memories of life. Like them, it now does no harm, and produces no symptoms, and the patient is cured.

I am, Sir, yours faithfully,

HUGH WINGFIELD.

Rupert-road, Bedford Park, W., Sept. 26th, 1924.

MILK PROBLEMS.

To the Editor of THE LANCET.

SIR,—The leading article with this title in your issue of Sept. 20th opens up points of vital importance to national health. Taking milk as a whole the standard of purity in this country is very low indeed. There are a few enthusiastic pioneers in the industry, who, without compulsion, try to place a clean germ-free article on the market, but they are so few that their beneficent influence is negligible. It appears to me there are only two ways whereby the milk standard could be universally raised—viz., compulsion and education.

In regard to the former, if the Milk and Dairies Act, and the Tuberculosis Order, 1914, were put into force, great good would follow, and I think it is unfortunate that such an influential body as the Council of the British Medical Association should decline to bring pressure to bear upon the Government for its introduction. The veterinary profession is prepared to give its blessing to these Orders. In regard to education the public are very apathetic on the question of pure milk, and this apathy can only be accounted for by their ignorance of the dangers to health that impure milk involves. The educational process must needs, therefore, be slow, and to reach the "man in the street" the propaganda would have to be simple, descriptive, and unusual. If, for example, there were thrown upon the cinema screens specimens of (1) impure milk showing debris, &c., (2) pathogenic germs found in milk, and the diseases they produce, not forgetting to mention the number of children who die annually from bovine tuberculosis, the public would soon realise the risks they were running and a demand for the pure article would follow.

I recognise that such an insight by the layman might do some initial harm to the milk industry, but this would only be temporary, for the public demand would compel the dairy industry to put its house in order, and an increased consumption of milk would follow. Public authority has recently instituted a graded system of milk production, but the number of milk producers who have taken it up are so small that it can scarcely be called a success. We are far behind other countries. What impressed me more than anything at The Hague Dairy Exposition of 1911 was the kindly, elaborate, and thorough manner in which the Government authorities educated the small farmers on the essentials necessary to produce a pure, clean milk.

I am, Sir, yours faithfully,

W. M. SCOTT, F.R.C.V.S.

Bridgwater, Sept. 23rd, 1924.

THE TRANSMISSION OF ENCEPHALITIS LETHARGICA.

To the Editor of THE LANCET.

SIR,—I should be glad if you would give me this opportunity of commenting on a review of encephalitis lethargica which you summarise in THE LANCET of Sept. 27th. In this review Dr. Da Fano repeats certain criticisms made by Dr. S. Flexner and others concerning the transmission of encephalitis lethargica to rabbits. These writers state that they doubt whether encephalitis lethargica has ever been transmitted to rabbits at all. A criticism based on the fact that a spontaneous encephalitis is known to occur in rabbits, and on the difficulty of obtaining positive inoculation results at the present moment. In the period between 1918 and 1921 I consider that I successfully raised the virus from human material on several occasions and carried the virus on in series in rabbits. Previous to these results many failures were obtained, chiefly on the fact that monkeys were used instead of rabbits. Similar positive results were obtained by Loewe, Hirshfield and Strauss, Levaditi and Harvier, and others.

In reply to these criticisms might I point out that they can only have been made by writers who had not weighed carefully the evidence of the literature before them, and who were unfamiliar with the histological lesions of true experimental encephalitis? In support of this contention the following facts can be urged. It was only from human material showing the definite lesion of encephalitis lethargica that an experimental encephalitis was produced on inoculation. Control inoculations consisting chiefly of material believed to come from cases of encephalitis which subsequently on histological examination proved not to be cases, did not produce an encephalitis.

The spontaneous encephalitis of rabbits is uncommon amongst our laboratory rabbits, as no case has been found in a very large number of examinations, and similar results have been obtained in the last year when many cerebral inoculations have been made during the course of another research. The histological lesion in the spontaneous encephalitis of rabbits is really of the nature of a granuloma with numerous large epithelioid cells, while that of experimental encephalitis lethargica is a perivascular sheath infiltration of small round cells (chiefly lymphocytes) with focal accumulations of similar cells in the brain substance.

There should, therefore, be no difficulty in distinguishing these two, even to the inexperienced, and the possibility of staining the parasite of the rabbit encephalitis gives a further conclusive control.

I am, Sir, yours faithfully,

JAMES MCINTOSH.

The Bland-Sutton Institute of Pathology,
Middlesex Hospital, London, W. 1,
Sept. 30th, 1924.

Obituary.

WALTER HAMILTON ACLAND JACOBSON, M.CH. OXF., F.R.C.S. ENG.

THE recent death of Mr. W. H. A. Jacobson at his residence in Kent, where he had lived in retirement for over 15 years, will recall to many old students of Guy's Hospital a great teacher of surgery, whose arresting personality, brilliant intellect, and amazing powers of expression made everything he said and wrote interesting and memorable. Jacobson was educated at Oxford and Guy's Hospital. He took his B.A. (first class in Natural Sciences) in 1869, and became M.R.C.S. Eng. in 1872, gaining his Fellowship three years later. As assistant surgeon at Guy's Hospital he was appointed teacher of operative surgery in the medical school, later becoming lecturer on anatomy. He was also surgeon at the Royal Waterloo Hospital for Children and Women.

Jacobson's most enduring and laborious work was the compilation of "The Operations of Surgery," first published in 1889, which has since run through six editions, of which the last appeared in 1915. The first edition, in one volume, was a bold attempt on the part of the author to treat the subject of operative surgery in a much more complete and detailed manner than had been done by any of the contemporary English or American authors, and succeeded in becoming the best general treatise on surgical operations in the English language. Subsequent editors, in order to bring it up to date, have had to delete much of the original matter, but no one who has the first edition parts with it. The descriptions of the operations were clear, accurate, and detailed, and the work was far more than a mere guide to operating on the cadaver. The success of this book exceeded all expectations, for its wealth of clinical experience and its accurate description of operations made it indispensable to every surgeon: not a few still speak of it as their Bible. In 1893 Jacobson published the results of some ten years' work in "The Diseases of the Male Generative Organs." Before that date many valuable articles and monographs on this branch of surgery had appeared in France, Germany, and England, and Jacobson, just when some correlation in this field was needed, gathered up the results obtained and formulated the position of contemporary knowledge. From 1893 to 1898 he examined for the Royal College of Surgeons of England as a member of the Board of Examiners in Anatomy and Physiology, and as a member of the Court of Examiners from 1900 to 1905.

Jacobson was possessed of literary ability far beyond the common. His In Memoriam notice of John Hilton, which appeared in Guy's Hospital Reports, of which Jacobson was for many years joint editor, is a model in style. His articles in the "System of Surgery," edited by Homes and Hulke, on fractures, injuries of the back, injuries of the face, and others, were generally recognised as among the best in that work. He did not write many papers, but the few were good. Among them might be mentioned his articles on diseases of the foot and ankle and on diseases of the scrotum in Heath's "Dictionary of Surgery." Of his medical writings in Guy's Hospital Reports, his account of Five Cases of Chancre in Medical Men may be mentioned as an example of lucid description. In THE LANCET his name appeared frequently as a speaker on such subjects as lumbar nephrolithotomy, the surgical sequelæ of fevers, and vesical calculi, in the Clinical Society of London, and of the Harveian Society, of both of which he was an enthusiastic member, and in 1883 he published a series of remarks on the entire removal of the tongue with scissors by the Whitehead method.

Of his qualities as a teacher and as a man Sir William Hale-White sends the following appreciation: "All my surgical appointments were either under Jacobson or Sir Henry Howse, whose assistant surgeon Jacobson was. He was the best teacher I have ever met, partly from a great natural gift, partly from the trouble he took. The theatre was always packed, those who were not there in time could not find a seat. Crowds attended his out-patients, his demonstrations, and his visits to the wards. Hilton in his last years said, 'I know I used to be down upon the men, but I did it for their good.' The same was true of Jacobson. His straight speech to the idler would have been resented had it come from anyone else, but all forgave on account of their knowledge that his object was to make them learn. No one will ever know a tithe of all that he did for the students when they were in trouble, they loved him, and recollected him long after they had left the hospital. He was a man who always remembered little things. I was sitting with him in his study one evening when Sir Henry Howse's servant brought Jacobson a brace of pheasants. He went into the hall, thanked the man, gave him some cigars for his trouble, came back, and in two minutes jumped up saying that as Howse did not smoke and disliked the smell, he ought not to have given his servant cigars. Thereupon he rushed down the street, recovered the cigars, and gave the man money instead. His honesty, his true kindness, his genius for teaching both orally and by writing, and his personality gave him a great position, and have created a lasting affectionate remembrance of him among the hundreds of students who came under his influence."

Somewhat late in life Jacobson was very happily married, but the tragic drowning of his little son and only child cast a shadow over his later years. He then gave up his appointment at Guy's Hospital and his private consulting practice, and retired to his country house at Hawkhurst. He loved the country and country folk and tramped about during many a long day. He was devoted to his wife, to his garden, and to his poor neighbours, especially the children. Needless to say they returned his love and brought him occupation and happiness.

HENRY GERVIS, M.D., F.R.C.P. LOND.

Dr. Henry Gervis, consulting obstetrician to St. Thomas's Hospital, whose death occurred on Sept. 25th at his house in Bath, had reached the advanced age of 86. Throughout a long professional career he was well known as a great obstetrician.

Born in 1837 at Tiverton, he was educated at Mill Hill School and Trinity College, Cambridge, entering the medical profession through St. Thomas's Hospital Medical School. A successful student, he obtained both exhibitions and gold medals at the University of London; he graduated M.D. in 1861 and took the M.R.C.P. Lond. in the following year, 12 years later being elected F.R.C.P. At St. Thomas's Hospital he filled in succession all the obstetrical posts, becoming consulting obstetric physician on his retirement. Over his long period of active service he was not only a valuable member of the staff but a distinguished teacher.

One of his pupils, now himself of consulting rank, writes as follows: "Those who had the privilege of working under Gervis during their curriculum at St. Thomas's Hospital remember with gratitude the instruction which he gave them in his special branch of work. Always considerate towards his patients, he inculcated into his clerks and house officers the necessity of kind and gentle treatment of every patient, no matter how troublesome she might be in her elaboration and repetition of symptoms. He was physician to the hospital at a time when the obstetric physician was regarded as a prescriber of medical remedies rather than as a surgeon. The surgeons permitted him to perform operations, but not those which involved opening of the peritoneum. As this branch of the obstetric art was practically non-existent in the days when Gervis first joined the staff, there was no complaint, because it was the custom at all hospitals to

restrict the operations of the gynæcological department to those which could be performed per vaginam. When doing these he was careful, cleanly in his work, and very thorough, taking the opportunity of demonstrating the advantages of the method which had been employed as compared with others. It is not surprising that he gained a great influence over his patients and he was spoken of with affection by them long after he had retired from the active practice of his profession. As a lecturer he was clear in diction and always succeeded in making his lectures interesting. One knew that they contained not only the recent ideas on the subject, but also conveyed his own matured judgment. He was pleased to discuss any apparently obscure point, and never conveyed the impression that it was a trouble to do so, although the large extent of his practice as a consultant must often have rendered any such discussion more than inconvenient. To one who was a clinical clerk and afterwards resident accoucheur in his clinique, the memory of Henry Gervis will always be an abiding and a happy one. Of tall figure, graceful carriage, and pleasant manner, the friendly expression of his face as he turned to answer some question, adjusting his spectacles as he did so with thumb and little finger, is still distinct, though many years have passed since the last impression was received."

To this sympathetic but accurate document little addition is necessary to show Dr. Henry Gervis's claims to be regarded as a professional leader. His fairness and accuracy assured his selection as an examiner and he discharged this office for the Universities of Cambridge and London and the Royal College of Physicians of London. He was elected President of the Obstetrical Society and of the Hunterian Society, before the latter of which he delivered the Annual Oration as long ago as 1875. He was not a prolific author, but whatever he wrote was informed by his personal experience, and valuable papers will be found by him in the St. Thomas's Hospital Reports on such subjects as hydramnios, the anatomy of the hymen, and puerperal septicæmia. He also wrote the article on sterility in Allbutt and Rolleston's System, and contributed the article on phlegmasia dolens to Quain's Dictionary of Medicine.

In private life Dr. Gervis was a keen archæologist, being a Fellow of the Society of Antiquaries and of several archæological associations. His only son is a member of the medical profession.

HARTLEY LUPTON.

BY the death of Mr. Hartley Lupton physiology has lost one of the best and keenest of its recent recruits. Lupton was originally trained as a physicist, and his first work was carried out at the University of Manchester, of which he was a student, on radium. He then proceeded to study for a medical degree, but found that research work in physiology offered greater attractions. Under the guidance of Prof. A. V. Hill he commenced an investigation into the physiology of muscular contraction and muscular work in the human subject, and as a result of three years of very hard work, continued up to the time of his death, he contributed very materially to our knowledge of this branch of human physiology. His work served to illustrate in a surprisingly clear manner the application of academic knowledge to facts of everyday life. He faced death, as he lived, with constant fortitude, and his open and generous character will be missed by a large circle of friends in Manchester and in London, where his life's work came to its abrupt end.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Medical News.

UNIVERSITY OF LONDON.—A course of three lectures on La douleur, au point de vue des fonctions affectives et perceptives will be given in French by Prof. Henri Piéron, of the Sorbonne, Paris, in October. Further details will be announced later. The Semon lecture, entitled Malignant Disease of the Gullet, will be given in French by Dr. D. Guisez, of Paris, at the rooms of the Royal Society of Medicine, 1, Wimpole-street, W. 1, on Thursday, Nov. 6th, at 5 P.M. Admission to these lectures is free. A course of 24 University extension lectures on the History of Science will be given by Dr. Charles Singer at Gresham College, Basinghall-street, London, E.C. 2, on Mondays, at 6 P.M.

University College.—To-day (Friday), at 5.30 P.M., Prof. T. Percy Nunn will lecture on the Scientific Interpretation of Nature. This lecture is introductory to the new course for the M.Sc. on the Principles, History, and Method of Science. Prof. E. H. Starling will be in the chair. The lecture is open to the public without fee or ticket. A public lecture will be given on Oct. 8th, at 6 P.M., by Prof. C. Spearman, F.R.S., on the Current Views of Individual Differences in Ability.

The following elections have been made in the Faculty of Medical Sciences at University College, London: To the Bucknill Scholarship, of the value of 160 guineas, Mr. D. F. Ogborn (Wood Green County School). To Exhibitions of 55 guineas each: Mr. W. A. Wilson (Hornsey County School) and Mr. H. Tomkin (Coopers' Company School). To the Epsom Medical Scholarship, Mr. R. W. Haines. To an additional Scholarship, Mr. P. A. Cooper, also of Epsom College.

King's College.—A special course of eight lectures on the Histology of the Nervous System will be given during the Michaelmas Term (October–November), in the Physiology Lecture Theatre of the College, Strand, W.C. 2, by Dr. C. Da Fano, reader in histology in the University. The lectures will be accompanied by demonstrations of specimens, and will be held on Wednesdays at 4.30 P.M., beginning on Oct. 8th. The course is free to all students of London colleges, and to medical men and others on presentation of their visiting cards. The course has been recognised by the University of London as one of the special courses for the B.Sc. honours degree.

Five lectures on the Human Body and its Function will be given by Prof. R. J. S. McDowall on Wednesdays, at 5.30 P.M., beginning on Oct. 8th; four lectures will be delivered by Dr. E. W. Scripture, at 5.30 P.M., on Oct. 6th, 13th, and 20th, and Nov. 3rd. Six intercollegiate lectures, open to the public, on Scientific Method, will be given on Fridays, at 5.30 P.M., beginning on Nov. 7th by Prof. E. W. Hobson, F.R.S., Prof. L. T. Hobhouse, Prof. E. G. Coker, F.R.S., Prof. E. W. MacBride, F.R.S., Dr. E. S. Russell, and Prof. A. V. Hill, F.R.S.

Parliamentary By-election.—At a meeting of the London University supporters of the Labour Party on Sept. 25th, F. G. Bushnell, M.D., B.S. Lond., D.P.H. Camb., was unanimously adopted as Labour candidate in the coming by-election. Dr. Bushnell graduated in medicine from University College Medical School in 1891, and during the war served in the R.A.M.C. (27th Division) in France and Macedonia. He is now tuberculosis medical officer, deputy medical officer of health, and joint bacteriologist to the Plymouth Borough Council. His active association with the Labour Party dates back some years, and his report on the employment and after-care of tuberculous persons which appeared in THE LANCET of Sept. 27th was drawn up at the request of the advisory committee of the Trades Union Congress and Labour Party.

LONDON MEDICAL EXHIBITION.—This exhibition which has now become a feature of the medical year, will open at the Central Hall, Westminster, London, S.W., on Monday, Oct. 6th, and close on Friday, Oct. 10th. Established in 1905 its scope has now been enlarged in an attempt to cover the whole range of agencies for medical treatment. The exhibition, which is open to medical men only, will comprise the most recent organo-therapeutic, bacteriological, and pharmaceutical remedies and prophylactics; electro-therapeutic apparatus; scientific dietary; surgical instruments; hospital furniture and medical appliances, diagnostic material, and apparatus; pathological and physiological apparatus; artificial limbs, aids in invalidity and deformity; sick-room requisites; natural and artificial hydrotherapy; professional literature; hygienic clothing, and so forth. Invitation cards can be obtained from the secretary of the exhibition, 194–200, Bishopsgate, London, E.C., or at the Central Hall during the exhibition.

TAVISTOCK CLINIC.—A course of ten lectures on Elementary Psychotherapy will be given at the Tavistock Clinic for Functional Nerve Cases, 51, Tavistock-square, W.C., by Dr. H. Crichton Miller on Mondays, at 5.30 P.M., beginning Oct. 13th. A syllabus of the lectures and further details may be obtained from the lecture secretary at the clinic.

HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET.—A course of lectures for medical practitioners will be delivered at the hospital on Thursdays at 4 P.M., from October to December. The course will open on Oct. 9th, when Mr. F. G. Doyne will deal with Dacryocystitis Neonatorum. The other lectures will be announced appropriately in our Medical Diary. The lectures are free to medical practitioners.

NATIONAL INSTITUTE FOR THE BLIND.—The After-care Department of the National Institute for the Blind states that during August 45 new cases came under their care (19 men and 26 women). Gifts, inclusive of clothing, to the number of 21 were provided at a cost of £37. The amount expended in training fees was £19, in relief £360, and in relief administered by branches £113.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual dinner of this society will be held at the Hotel Cecil, Strand, W.C., on Friday, Oct. 17th, at 7.30 P.M. The Minister of Health hopes to attend, and others who have accepted include the Bishop of Winchester, Sir Alfred Mond, Major Haden Guest, M.P., Sir Humphry Rolleston, P.R.C.P., Sir Arthur Robinson, Sir George Newman, and Major-General J. E. B. Seely. A musical programme is being arranged to follow the dinner. Ladies are invited, and members are asked to give early notice to the executive secretary, 1, Upper Montague-street, Russell-square, W.C. 1, of their intention to be present, with the names of their guests. A payment of 12*s.* 6*d.* for each ticket should be included with applications sent before Oct. 11th; after that date the cost of tickets will be 15*s.* each.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.—A special post-graduate course will be held this week end, Oct. 4th, 5th, and 6th. On Saturday, Oct. 4th, at 11 A.M., Mr. T. G. Stevens will lecture on Chronic Metritis and Allied Disorders, and at noon Sir William Willcox will discuss the Toxic Factor in Disease. At 2 P.M. Dr. C. M. Wilson will speak on Neurology: the Essential Minimum, to be followed at 3 P.M. by Dr. A. Hope Gosse on Common Cardiac Irregularities. On Sunday, Oct. 5th, there will be two lectures, one at 10.30 A.M., on Diet and Disease, by Prof. B. J. Collingwood, and one at 11.30 A.M., on Surgical Treatment of Gastric Ulcer, by Prof. C. A. Pannett. Mr. Zachary Cope will address the first meeting on Monday, Oct. 6th, at 10 A.M., taking for his subject Differential Diagnosis of Acute Right Hypochondriac Pain; Mr. Aleck Bourne will speak at 11 A.M. on the Investigation of a Case of Puerperal Fever, and Mr. Gordon Bryan will discuss the Diagnosis of Acute Abdominal Illness in Children at noon. Dr. Reginald Miller will lecture on Colonic Toxæmia and its Medical Treatment at 2 P.M., and the concluding lecture will be delivered at 3 P.M. by Dr. J. B. McDougall on Some Practical Points in the Diagnosis and Treatment of Pulmonary Tuberculosis. The course is open to all medical practitioners without fee, and will be held in the Library of St. Mary's Hospital Medical School (South Wharf-road entrance or Cambridge-place entrance).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, Oct. 6th, will begin a series of post-graduate lectures on cancer, delivered in the West Lecture Hall of the Royal Society of Medicine, Wimpole-street, at 5.30 P.M. The first lecture, on the General Pathology of Cancer, will be given by Dr. Archibald Leitch. The second lecture takes place on Wednesday, the 8th, when Sir Thomas Horder will lecture on Cancer from a Medical Point of View. These lectures are open to all members of the profession, and no fees are charged. The second week of the course in psychological medicine at the Bethlem Royal Hospital begins on Tuesday, the 7th. This course is a series of lecture-demonstrations given on Tuesdays and Saturdays, at 11 A.M., by Dr. Porter Phillips and Dr. Thomas Beaton. On Tuesday also begins the series of eight clinical demonstrations on tropical medicine, to be given at the London School of Hygiene and Tropical Medicine, by Dr. G. C. Low and Dr. P. H. Manson-Bahr, at 2 P.M.; the second demonstration takes place on Thursday at the same time. On Wednesday, Oct. 8th, at 5.30 P.M., will be given the first of four lecture-demonstrations on Treatment by Electro-therapy at the Royal Free Hospital, by Dr. C. B. Heald. Full particulars and syllabuses of all these courses may be obtained from the Secretary of the Fellowship of Medicine, 1, Wimpole-street, W. 1.

CITY OF LONDON HOSPITAL FOR DISEASES OF HEART AND LUNGS.—A short intensive course for post-graduates will be held at the hospital at Victoria Park, E., from Monday, Oct. 13th, to Friday, the 17th. On the first day, Oct. 13th, Dr. J. Browning Alexander will lecture on Diabetes and Tuberculosis at 11 A.M., and Dr. S. R. Gloyne will lecture on the Pathology of Pneumothorax at 2.30 P.M. Subsequent lectures will be announced in the Medical Diary, and further particulars may be had from the Dean of the hospital.

MEDICAL SOCIETY OF LONDON.—The syllabus of the first half of the session has just been issued. On Oct. 13th, at 8 P.M., the annual general meeting will be held, to be followed, at 8.30 P.M., by the President's address on Medical Memories, by Dr. E. M. Callender. On Oct. 27th, at 8.30 P.M., there will be a clinical evening, with exhibition of cases and skiagrams. On Nov. 10th, at 8.30 P.M., a discussion on Encephalitis Lethargica will be introduced by Dr. E. Farquhar Buzzard, followed by Prof. A. J. Hall, Prof. J. McIntosh, Dr. A. Salusbury MacNalty, and others. On Nov. 19th, at 5 P.M., the Lloyd Roberts lecture on the Renaissance of Midwifery will be delivered by Dr. Herbert Spencer. The meeting on Nov. 24th, at 8.30 P.M., will be devoted to a discussion on the Treatment of Senile Gangrene, to be introduced by Sir Anthony Bowlby, followed by Dr. H. des Vœux, Mr. Sampson Handley, and others. On Dec. 8th, at 8.30 P.M., a discussion on the Present Position of the Treatment of Diabetes by Insulin will be introduced by Dr. George Graham, followed by Prof. H. MacLean and others. The Lettsomian lectures on Wounds and other Injuries will be delivered in February and March, 1925, by Sir Bernard Spilsbury. The annual oration on the Medical Career of John Keats will be delivered in May, 1925, by Sir William Hale-White.

MEDICAL DEFENCE UNION.—The annual general meeting of this Union was held at the Brighton, Hove, and Preston Dispensary on Thursday, Sept. 25th. The President, Mr. Walter G. Spencer, F.R.C.S., was in the chair, and 26 other members were present. In moving the adoption of the annual report of the Council for the year 1923–24, the President congratulated the members upon the satisfactory position now occupied by the Union. The first year in the new offices had been attended by a marked increase in the number of applicants for membership. Already the number of new members elected in the nine months of the current year (over 1200) exceeded that of the whole of any previous year, the roll of members now having reached a total of over 11,800. The President referred in feeling terms to the death of Sir John Tweedy, a former president, and Dr. J. Roche Lynch and Dr. A. C. Roper, former members of the Council, and also to the loss which the Union had sustained through the retirement of Dr. M. Hallwright from the Council owing to ill-health. He congratulated the Union on the efficient services rendered to the Union by the general secretary and his clerical staff. The very full and clear report supplied by the solicitor was highly satisfactory, and there had been remarkable success in those legal actions which the solicitor had advised the Union to undertake during the past year. The annual report of the Council and the financial statement for the year 1923 were adopted unanimously. Sir Charles Ballance, Dr. E. C. Greenwood, and Dr. W. S. A. Griffith were unanimously re-elected members of the Council. The auditors were reappointed for the current year and a hearty vote of thanks was accorded to the President and Council for their services during the past 12 months. At the conclusion of the annual general meeting an extraordinary general meeting was held, when proposals submitted by the Council for alteration of the Articles of Association were unanimously adopted.

BRIGHTON WATER-SUPPLY.—Despite the troubles in the building trade building developments are going on on a large scale in Brighton and in the surrounding district, which includes Rottingdean in an eastward direction and Shoreham-by-Sea in the westward. Large houses and small ones which formerly sheltered but one family are being converted into flats, thus adding to the population by leaps and bounds. The demands upon the water-supply have been increasing very rapidly, and careful watchings have shown that while the limit of the supply has by no means been reached, the limit of the pumping capacity and also the limit of the storage capacity have been reached. These facts were brought to the notice of the corporation, and that body by a unanimous vote on Sept. 25th decided to proceed forthwith with an estimated expenditure of £106,855 by way of extensions of the pumping stations and reservoirs and other concomitant works. The water-works undertaking at Brighton has unexhausted borrowing powers sufficient to cover this large figure, and this will save the necessity of any application being made to Parliament.

SUMMER Time in France will cease at midnight on Saturday, Oct. 4th, when the clocks will be put back one hour. This is practically a fortnight later than in England.

A SUM of £35,287 has been distributed to various London hospitals and charities out of the collections made on Alexandra Day, June 25th, which amounted to £40,423.

MEMORIAL TO THE LATE DR. J. EVAN JONES.—A memorial in the form of a lych gate at the entrance to Ludgershall churchyard, Wiltshire, erected by former patients and friends, was recently dedicated to the memory of "James Evan Jones, M.R.C.S., L.R.C.P., born April 18th, 1869, died April 15th, 1923." Dr. Jones, who was educated at Llandovery College and St. Bartholomew's Hospital, had practised medicine in the district for over 20 years.

UNIVERSITY OF MELBOURNE: CHAIR OF DENTAL SCIENCE.—To this newly created chair Mr. F. C. Wilkinson, B.D.S., M.D., of the University of Liverpool, has been appointed. Prof. Wilkinson commenced his dental studies in 1906 under Prof. W. H. Gilmour, and in 1912 took the degree of B.D.S. with honours, graduated as M.B. and Ch.B. in the same year, and in 1917 obtained the degree of M.D. From 1915–18 Dr. Wilkinson served with the R.A.M.C. at the Liverpool Merchants' Mobile Hospital in France. Since then he has been engaged in private practice and has also held various appointments at the University and at the Dental Hospital.

UNIVERSITY OF LIVERPOOL: CLINICAL SCHOOL.—The hospitals comprising the Liverpool Clinical School are again arranging to hold lecture-demonstrations for practitioners during the University terms. The programme is so planned that on any one day a demonstration is given by one hospital only. All demonstrations will commence at 3.30 P.M. The lecture-demonstrations will be largely clinical in character; the lecturers and subjects will be arranged by individual hospitals and will include in rotation all the various clinics covered by the hospital concerned. The programme for the week commencing Oct. 6th will be found in the Medical Diary, p. 733. Further particulars may be obtained from the Secretary, 61, Rodney-street, Liverpool.

LIVERPOOL PSYCHOLOGICAL SOCIETY.—The second session of this society will commence on Oct. 7th, when Dr. Betts Taplin, the President, will deliver an inaugural address on the Power of Suggestion at the University of Liverpool at 8 P.M. The society's first session has been very successful, and an interesting programme of scientific research has been arranged for the coming winter. Further particulars may be obtained from the secretary, The University, Liverpool.

WIRELESS CONCERTS FOR LIVERPOOL PATIENTS.—A six-valve wireless receiving set has just been installed in the City Sanatorium at Fazakerley, Liverpool, and has been connected up by overhead wiring to seven wards in which loud speakers have been placed. In helping to relieve the monotony of prolonged sanatorium routine, wireless, it is felt, will be of the utmost value. The stimulus came from an enthusiastic patient, who put together a small set of his own, together with an ear-piece, which he hung by his bed.

DONATIONS AND BEQUESTS.—Under the will of the late Miss Mary Wilson Mitchell, of Macrocarpa, Ventnor, the testatrix left among other bequests £8000, as the trustees of her will may think fit, for distribution among war or other charities, institutions, hospitals, convalescent and nursing homes; £1000 each for a Mitchell bed in the Women's Block of the Royal National Hospital for Consumption, the Church Missionary Society, and the Church of England Zenana Missionary Society; £500 each to the London Hospital, Guy's Hospital, St. Bartholomew's Hospital (New Hospital Building Fund), St. Thomas's Hospital, the Middlesex Hospital (for the Cancer Research Laboratory), the Royal Northern Hospital, the Hospital for Epilepsy and Paralysis, Maida Vale, the Mildmay Mission Hospital, the Royal Isle of Wight County Hospital (for a Mitchell bed in the women's ward), Lord Mayor Treloar's Cripples Home and College (for a Mitchell cot), and King Edward's Hospital Fund for London; and £300 each to the Poplar Hospital, the Royal Free Hospital, and the Cancer Hospital, Fulham.—Among bequests left by the late Mr. Jabez Gurteen, J.P., of Haverhill, Suffolk, and of Sturmer, Essex, is one of £1500 to the Royal Surrey County Hospital, Guildford.—By the will of the late Sir Walter James Buchanan, K.C.I.E., sometime editor of the *Indian Medical Gazette*, he left, in addition to property in Ireland, personal estate in England of the net value of £9348. He bequeathed one-thirtieth of all his other property, after a bequest of £7000, to Sir Patrick Dun's Hospital, Dublin.

MANCHESTER MEDICAL SOCIETY.—This society, of which Prof. G. R. Murray is President, will hold its opening meeting for the session on Wednesday, Oct. 8th, at 8 P.M., when Dr. Arthur F. Hurst will deliver a lecture on the Sphincters of the Alimentary Canal and their Clinical Importance. A full syllabus of the meetings may be obtained from the hon. secretary, Dr. A. Hillyard Holmes, The University, Manchester.

MANCHESTER JEWISH HOSPITAL EXTENSION.—Lord Leverhulme recently laid the foundation-stone of the new nurses' home which is being added to the Victoria Memorial Jewish Hospital. The building will cost at least £15,000, which does not include equipment. To this end an appeal has been launched for half a million shillings. Although founded and managed by Jews, the hospital is open to all people irrespective of race or creed. At present there are 38 beds and a staff of 14 nurses. The new building will raise the number of beds to 52, and the nursing staff will be increased to 28, and the hospital will then be able to qualify as a training centre for the certificate of the General Medical Council. Already 25,000 shillings have been collected or promised. Last year the hospital treated 9800 in-patients and out-patients at a cost of 11s. 6½d. per patient.

BRADFORD MENTAL DEFECTIVES.—At a meeting of the Mental Deficiency Committee of the Bradford Corporation held last week, it was resolved to submit a scheme for a new mental institution to the City Council and the Ministry of Health. The new institution would accommodate 340 patients, and would cost £133,000; later it is hoped to extend the scheme to provide for 500 patients. The additional total expenditure involved is anticipated to be £6240 per annum, half of which sum will be met by the Board of Control. The scheme comprises the erection of administrative buildings, a laundry, a recreation hall, a hospital, and accommodation for doctors and nurses. One of the benefits of the institution will be that it will be possible to separate patients of varying stages of intelligence in different buildings and grades.

LADIES' MEDICAL GOLFING SOCIETY.—The autumn meeting was held at Addington on Sept. 26th. The scratch prize was won by Mrs. Collis-Browne with a score of 89, after a tie with Mrs. de Paula. The senior handicap prize was won by Mrs. Lucas Keene, M.B. (95−19=76), and the junior handicap prize by Mrs. H. Carson (112−26=86). The special prize for the aggregate of spring and autumn meeting scores under handicap was won by Mrs. Collis-Browne (83 net+85 net=168), who also won the fourball foursomes competition in the afternoon, partnered by Mrs. Lucas Keene. The meeting was to some extent marred by bad weather, but thanks to the untiring energy of Miss Cecil Leitch, the captain, who acting as hon. secretary made herself responsible for all arrangements, it was nevertheless a most successful one.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Oct. 7th.

ORTHOPÆDICS: at 5.30 P.M. (Cases at 5 P.M.)
Presidential Address:
Mr. H. A. T. Fairbank: Some Affections of the Epiphyses.
Cases illustrating Unusual Conditions of Epiphyses will be shown.

Thursday, Oct. 9th.

NEUROLOGY: at 8.30 P.M.
Presidential Address:
Dr. E. Farquhar Buzzard: The Evolution of Neurology and its Bearing on Medical Education.

Friday, Oct. 10th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)
Cases:
Sir StClair Thomson: Two Cases of Persistent Paralysis of One Vocal Cord from a Tubercular Lesion involving the Recurrent Laryngeal Nerve.
Dr. F. Parkes Weber: Recklinghausen's Disease with Left Lateral (suprazygomatic) Meningocele, simulating a Soft Fibromatous Fold of Skin.
Other cases will be shown.

OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)
Cases will be shown.
Presidential Address:
Sir Arnold Lawson: Tinted Lenses and their Uses. Discussion is invited.
Paper:
Mr. A. F. MacCallan: Cataract Operations in Egypt.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, Oct. 6th, to SATURDAY, Oct. 11th.—WEST LECTURE HALL, ROYAL SOCIETY OF MEDICINE, W. Lectures arranged by the Fellowship of Medicine and open to all members of the medical profession. To start at 5.30 P.M. Mon., Dr. Archibald Leitch: The General Pathology of Cancer. Wed., Sir Thomas Horder, Bt.: Cancer from a Medical Point of View. —BETHLEM ROYAL HOSPITAL. Lecture-Demonstration on Tues. and Sat. at 11 A.M., by Dr. Porter Phillips and Dr. Thomas Beaton.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE. Tues. and Thurs., 2 P.M., Dr. G. C. Low and Dr. Manson-Bahr: Clinical Demonstrations on Tropical Medicine.—ROYAL FREE HOSPITAL, Wed., 5.30 P.M., Dr. C. B. Heald: Lecture-Demonstration on Treatment by Electro-Therapy, illustrated by cases under treatment at the hospital.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Oct. 6th.—11 A.M., Surgical Registrar: Surgical Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.
TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients.
WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients. Dr. Pernet: Skin Dept.
THURSDAY.—12 noon, Medical Registrar: Clinical Methods. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.
FRIDAY.—11 A.M., Dr. McDougal: Medical Electricity. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Dr. Burrell: Medical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M., to 6 P.M., Saturdays, 10 A.M., to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 9th.—4 P.M., Mr. Doyne: Dacryocystitis Neonatorum.

ST. JOHN'S HOSPITAL, Leicester-square, W.C.
TUESDAY, Oct. 7th.—5 P.M., Dr. J. H. Stowers: Chesterfield Lecture.
THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Anatomy.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)
MONDAY, Oct. 6th.—(At the Children's Hospital.) Mr. W. A. Thompson: Hare-Lip and Cleft Palate.
TUESDAY.—(At the Southern Hospital.) Mr. Douglas-Crawford: Surgical Cases.
WEDNESDAY.—(At the Northern Hospital.) Mr. Rawlinson: Prostatism.
THURSDAY.—(At the Stanley Hospital.) Dr. Gullan; Action of Thyroid and Pituitary Glands.
FRIDAY.—(At the Royal Infirmary.) Dr. Bigland: Medical Cases, particularly Neurological.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Oct. 7th.—4.15 P.M., Sir John Bland-Sutton: Attic Salt for Gall-stones (Lloyd Roberts Lecture).
FRIDAY.—4.15 P.M., Prof. H. S. Raper: Fat Metabolism and Some of its Disorders.

Appointments.

COLLINS, F. G., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer of Health for the Borough of West Ham.
KETTLE, EDGAR HARTLEY, M.D., B.S., Professor of Pathology and Bacteriology to the Welsh National School of Medicine, to be Honorary Pathologist and Bacteriologist to the Cardiff Royal Infirmary.
LESTER-WILLIAMS, R., M.B., B.Ch. Camb., F.R.C.S. Eng., Resident Surgical Officer, Sheffield Royal Infirmary.
Gloucestershire Royal Infirmary: TERRY, H. C., M.B., Ch.B. Birm., Physician, and DAVEY E. N., M.B., B.Ch. N.U.I., Assistant Physician and Pathologist.
St. Mary's Hospitals, Manchester: FOULDS, E. J., M.B., Ch.B. Manch., and LATHAM, T., L.R.C.P. Lond., M.R.C.S., House Surgeons.
Surgeons under the Factory and Workshop Acts: ROGERS, H., M.B., B.Ch. Dub. (Milborne Port, Somerset); EVANS, G. O. D., L.R.C.P. & S. Edin. (Festiniog, Merioneth).

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne, District Infirmary.—H.S. for six months. £75.
Birmingham City Education Committee.—Asst. Sch. M.O. £600.
Blackburn Union and Infirmary.—Res. Asst. M.O. £200.
Bristol Royal Hospital for Sick Children and Women.—H.P. £125.
Bristol Royal Infirmary.—Hon. Dermatologist and Hon. Asst. S. to Ear, Nose, and Throat Dept.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Second Res. H.S. £75.
Dumfries, Crichton Royal Mental Hospital.—Asst. P. £350.
Durham, Richard Murray Hospital, Blackhill.—Res. M.O. £400.
Gloucestershire Mental Hospitals, Coney-hill, Barnwood.—Jun. Asst. M.O. £350.
Gloucestershire Royal Infirmary and Eye Institution, Gloucester.—Asst. H.S. £150.
Holborn and Finsbury Hospital, Archway-road, N.—Second Asst. M.O. £300.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. £50.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and Asst. Cas. O. for six months. Each £50.
Johannesburg, S. African Institute for Medical Research.—Bacteriologist.
Lancaster County Mental Hospital.—Asst. M.O. £582.
Leamington Spa, Warneford, Leamington and South Warwickshire General Hospital.—Res. H.S. £150.
Leicester Royal Infirmary.—H.P. for six months. £62 10*s.*
London Hospital Dental School, E.—Hon. Anæsthetist.
London Temperance Hospital, Hampstead-road, N.W.—Res. M.O. £175. Also Med. Reg. 40 guineas.
Manchester Royal Infirmary.—Res. M.O. £200. Also Asst. M.O. £100.
Miller General Hospital for South-East London, Greenwich-road, S.E.—H.P. £125.
Napsbury Mental Hospital, near St. Albans, Herts.—Fourth Asst. M.O. £526 10*s.*
Paddington Green Children's Hospital, W.—H.S. for six months. £75.
Royal Chest Hospital, City-road, E.C.—P.
Royal Free Hospital, Gray's Inn-road, W.C.—Med. Reg. £250.
Royal Naval Medical Service.—Surg. Lieuts. 25*s.* per day.
Royal Northern Hospital, Holloway, N.—H.P. and H.S. £75.
Salford Union Infirmary, Hope, Pendleton, near Manchester.—First Asst. Res. M.O. £300.
Victori Hospital for Children, Tite-street, Chelsea, S.W.—Cas. O. and R. £150.
Westminster Hospital.—Obstetric S. and Asst. Obstet. S.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Castleton, Derbyshire; Wellingborough, Northamptonshire; Swaffham, Norfolk.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the districts of the Blackpool (Circuit No. 4). Applications should reach the Private Secretary, Home Office, not later than Oct. 18th.

Births, Marriages, and Deaths.

BIRTHS.

LEMPRIERE.—On Sept. 23rd, the wife of Dr. L. R. Lempriere, of Haileybury College, Hertford, of a daughter.
SARRA.—On Sept. 20th, at "Coverack," Tilehurst-road, Reading, the wife of Dr. Edwin R. Sarra, of a son.
WILSON.—On Sept. 22nd, at Harley-street, W., the wife of Dr. C. M. Wilson, of a son.
WILSON.—On Sept. 23rd, at Putney-hill, S.W., the wife of Alex Wilson, M.D., of a son (still-born).

MARRIAGES.

SPIRA—SECKEL.—On Sept. 25th, at Hampstead, Dr. Jean Jacques Spira, of 35, Harley-street, W., son of Mr. and Mrs. Leon Spira, of Paris, to Esmée Angela, only daughter of Mr. and Mrs. Louis Seckel, of 120, Haverstock-hill, N.W.

DEATHS.

ATKINSON.—On Sept. 29th, at Osgathorpe House, near Loughborough, Edith Frances, the wife of Dr. S. E. Atkinson. Funeral Thursday at Chichester. Memorial service at 3 P.M. at Osgathorpe Parish Church.
DEIGHTON.—On Sept. 29th, at St. Bernards, Cambridge, Frederick Deighton, M.A., M.B., surgeon, aged 70.
GERVIS.—On Sept. 25th, at Royal-crescent, Bath, Henry Gervis, M.D., J.P., formerly of Harley-street, London, aged 86 years.
JACOBSON.—On Sept. 14th, at Lordine Court, Ewhurst, Sussex, aged 77 years, Walter Hamilton Acland Jacobson, M.Ch. Oxon., Consulting Surgeon of Guy's Hospital, last surviving son of the late Bishop Jacobson, of Chester.
MATHEWSON.—On Sept. 23rd, at Willingham, Cambridge, James W. Mathewson, M.B., Ch.B.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

A CLEAN MILK COMPETITION IN KENT.

BY ALFRED GREENWOOD, M.D., B.SC. MANCH., D.P.H.,
BARRISTER-AT-LAW, MEDICAL OFFICER OF HEALTH FOR THE COUNTY OF KENT.

DURING the earliest quarter of 1923 the first clean milk competition was held in the county of Kent. This competition originated from an inquiry received, during the summer of 1922, by the agricultural organiser to the Kent Education Committee, from a coast town dairy farmer supplying milk to several girls' schools at Broadstairs and Ramsgate. The headmistresses of these schools had been reading articles in a certain daily paper condemning fresh cows' milk on account of the filth and number of dangerous germs it was alleged to contain and, being alarmed at what they read, they asked the farmer supplying their schools with milk for some guarantee that his milk was reasonably clean. As a preliminary step it was arranged that samples of his milk should be taken by the district sanitary inspector and submitted to the county bacteriological laboratory at Maidstone for examination. This was done, but it was soon evident that other farmers were confronted with a similar difficulty, and that the consumption of fresh milk was being restricted by the fact that many members of the public were afraid of it.

Objects of the Competition.

The Agricultural Education Sub-committee of the Kent Education Committee decided, therefore, to organise a clean milk competition for four purposes :—

(*a*) To show that there might be already available a supply of clean milk in the county, in addition to what is sold as Grade A and certified milk.

(*b*) To assist those dairy farmers in the county already interested in, and anxious to produce, clean milk by examining their milk from time to time by visiting their cowsheds, and as a result of the examinations and visits by advising them as to the manner in which their methods could be improved.

(*c*) By friendly rivalry, to stimulate those dairy farmers who entered this competition, *and especially their milkers*, to learn the essential conditions necessary for the production of clean milk, and to encourage them to pay still closer attention to the conditions under which their milk is produced and handled.

(*d*) To demonstrate to dairy farmers, in general, how reasonably clean milk can be produced in ordinary farm buildings, and under ordinary farm conditions, without excessive increase of cost, so that a larger supply of such milk may be available for the public.

The Kent Milk Recording Society and the Kent Education Committee together organised the competition.

Rules for Competitors.

The Kent and Sussex Farmers, Ltd., gave a challenge cup for award to the winning competitor to be held for one year. A diploma was promised to each competitor reaching a sufficiently high standard, and also a certificate for each regular milker on a diploma farm. All successful competitors had the entry fee of £1 returned to them. Money prizes of £5, £4, £3, £2, and £1 were distributed amongst the workers on the first five diploma farms. The competition extended over three months from February to May, 1923, and was open to any dairy herd, not producing Grade A milk, where there were not less than ten cows in milk during the competition. Competitors were required to take and send for bacteriological examination to Wye Agricultural College, Kent, six samples representative of their bulk milk, and also an authorised representative of the committee made surprise visits in order to sample the milk periodically. Also the inspecting judge paid at least one surprise visit to each competitor's herd at milking time, and awarded marks according to a scale of points directly under the control of the farmer—e.g., the general health of the cows, the suitability and care of the utensils and other equipment used in handling the milk, the general method of handling the milk, &c.

The awards were made on the following scale of points :—

Examination of milk		900
Bacterial content and keeping qualities	800	
Chemical analysis	100	
Inspection on the farm		600
Health of cows	100	
Equipment	100	
Methods	400	
Total possible marks		1500

It may be mentioned here that the five prize winners were awarded total marks respectively of 1258, 1165, 1136, 1106, and 1100.

These rules, as set out above, were submitted to the Ministry of Agriculture, who gave them their approval and undertook to pay two-thirds of the net cost of running the competition.

The intention to hold the competition was made known widely. As a result, 53 entries were received, which is a far larger number of entries than has been received for any clean milk competition held in any county in England previously. All competitors were advised before the competition began to read an article written by Mr. J. Mackintosh in the April, 1922, issue of the *Ministry of Agriculture Journal*, and to obtain a copy of the Ministry of Agriculture's Leaflet No. 151 on Cleanliness in the Dairy. They were also sent a copy of the score-card which would be used by the inspecting judge on his surprise visits, so that they might know what were the important points and how many marks would be awarded for each item. The score-card used was the official one recognised by the Ministry of Health slightly amplified. The marks on the score-card were intended to have a strong educational value, so that a farmer with dirty milk, as indicated by a bacterial count, might be told where the fault probably lay.

Methods of Carrying-out.

The 53 competitors were arranged into three groups, with 13 competitors in each, and one group of 14 competitors. Each competitor had to submit one sample of morning milk every fortnight. Two sterilised glass (8 oz.) bottles were sent to him, and he was warned not to remove the rubber stoppers until the time when the samples were to be taken. He was given full instructions as to the manner in which the samples were to be taken from the churns containing the milk of the whole herd, and then he filled in a paper stating the time at which the sample was taken, together with the temperature of the milk. The two sample bottles were sent, by the first available post, to Wye College for bacteriological and chemical analyses respectively.

Troubles arose at the beginning of the competition through the corks supplied with the bottles being inferior, and it was necessary to replace them with rubber corks. Another trouble was delay by post, necessitating at times supplementary samples. Some competitors filled the bottles with milk, which, when warm, was liable to force out the cork. Also in full bottles cream may become attached to the bottom of the cork, rendering a true chemical analysis impossible. There should always be about an inch of air-space between the top of the milk and the bottom of the stopper.

At the beginning of the competition it was suggested that it was a weakness to allow the competitors to take their own samples of milk, because they might "fake" them. Even if this method is open to criticism, it is really the only practical one of obtaining a large number of samples within a limited space of time. Several safeguards against "faked" samples were adopted. Any samples showing abnormal results were examined for preservatives, &c. Also surprise samples were taken at all the farms and the results of those examinations were compared with the results of the samples taken by the competitors themselves. Again, the score-card marks proved to be a further check. Not a single case of "faking" was detected.

At the end of each fortnight an interim report was sent to the competitors showing the total number of bacteria and the number of coliform organisms found per cubic centimetre of the sample submitted, together with the percentage of butter-fat it contained, and also the marks awarded for keeping properties. The above figures for every herd were given, so that a competitor could compare his own results with those obtained by other competitors, but the identification of each herd was hidden under a code number. Each competitor was told the number of his own herd only, so that he could not identify the herds of his neighbours. These reports were appreciated thoroughly by the competitors. The fortnightly report also included advice as to the best methods of cleansing utensils, the making of a home-made steriliser, the injurious effects of *Bacillus coli*, the causes of sour milk, the prevention of dust in the cowshed at milking time, and the way in which dust by spraying might be diminished. The first fortnightly return was not sent out until after the second series of samples had been received from all competitors, and so on. In this way all competitors received the same advice at a time when they all had submitted the same number of samples of milk.

Those farmers whose milk contained coliform organisms were advised to keep a watch for manurial contamination. The method of scoring for *B. coli* was as follows : Full marks for each sample of milk were 100, and if *B. coli* could be detected in 1 c.cm. of milk, 10 points were deducted,

and by gradual stages up to such a point that if *B. coli* could be detected in 1/1000 c.cm. of milk, 40 points were deducted.

Similarly, in the total bacterial count if there were 500 bacteria or less in 1 c.cm. of milk no marks were deducted, and thence by gradual stages until a final point was reached where there were over 6,000,000 bacteria in each 1 c.cm. of milk, 70 marks were deducted.

The marks for keeping properties were awarded according to the number of days each sample remained sweet, without a taint and without clotting, when kept in an incubator at a standard temperature of 60° F. For each half day the sample remained sweet, starting from the time the sample was taken, two points were awarded.

For the percentage of butter-fat an average was taken of the analyses of the six morning samples submitted by each competitor. An average of 6 per cent. of butter-fat scored full marks (100), and three marks were deducted for every 0·1 per cent. below this figure down to 5·0 per cent. butter-fat which scored 70 marks. From 5·0 per cent. butter-fat downwards two marks were deducted for every 0·1 per cent. Therefore, at the end of the list, a sample showing 3·1 per cent. of butter-fat would score 28 marks.

The Results Obtained.

The results obtained were very interesting. The total number of samples of milk examined was 395, representing 11,731 gallons of milk. No less than 222 samples (representing 6300 gallons of milk) came up to Grade A milk standards for the number of *B. coli* and total number of bacteria of all kinds present, whilst 109 samples (representing 3250 gallons of milk) even came within the standards for certified milk. In other words, the 53 competitors between them were producing 3150 gallons of milk daily, and of the samples taken of this milk during the three months of the competition 54 per cent. came up to the Grade A standard, and 27 per cent. up to the certified milk standard for bacterial contents. This is a high commendation for Kent milk under the conditions named above. It will be remembered that the standard laid down in the Milk (Special Designations) Order, 1922, for certified milk is not more than 30,000 bacteria per c.cm. of milk, and no coliform organisms traceable in 0·1 c.cm., and that the standard for Grade A milk is not more than 200,000 bacteria per c.cm., and no coliform organisms in 0·01 c.cm. With respect to the keeping properties, a gradual improvement was noticed as the competition proceeded. Of the total number of 395 samples, 55 per cent. remained sweet for two and a half days from the time of sampling; 16 samples remained sweet for four complete days.

The average figures of butter-fat for individual herds ranged from 3·12 to 5·30 per cent., the average being 3·78.

Lessons to be Drawn.

Many valuable lessons were learned from this competition. It was proved that a large quantity of reasonably clean milk can be produced in Kent, and that expensive and up-to-date buildings are not essential for its production; they make it easier to produce clean milk but they are not essential. Plenty of water and close attention to small details are necessary. One little mistake may ruin what might otherwise have been an excellent sample—perhaps any one careless milker, one dirty cow or bucket, one dirty tap, or a dirty straining cloth might be the offender. The additional expense in producing reasonably clean milk does not take the form of additional capital outlay, so much as of extra time and trouble in getting the udders of the cows and everything else scrupulously clean. A man can clip the udders of 8 to 10 cows in one hour, and this should be repeated every 5 to 10 weeks. This operation does not cause chill in the udders. Another operation which saves time in the daily grooming is the clipping of the hair on the inside of the tail every few weeks. The only equipment necessary for grooming the cows is a wet brush and a currycomb for the tail and hindquarters, a strong cloth for the udders, some buckets of tepid water, and wrung-out cloths for wiping purposes. The udders should be washed separately from the tails and flanks, and a special bucket of water and cloth should be kept for that purpose. The operation of cleaning every cow under the above conditions will take two or three minutes each morning or evening.

As dust is such a great carrier of germs the spraying of the cowshed with water before milking is useful. With a knapsack sprayer this will take about five minutes. Frequent whitewashing of the cowshed is a great help. During the competition it was noticed that many of the milkers, with great pride, donned their white overalls, washed their hands, and examined their finger-nails before they started to milk. Partially covered milking or hooded pails proved valuable in preventing access of dirt to the pails during milking. The lack of proper cleansing of the dairy utensils was often the cause of bad samples of milk, and the need for a good supply of steam and water was well illustrated throughout. The value of a straining cloth is often over-rated. If a cloth is used which has not been properly sterilised since the last milking it may prove to be a fertile source of contamination. In that case a cotton-wool disc is preferable. A box containing 100 discs costs 2*s.* 6*d.* After use the discs can be discarded.

Cost of Cleanliness.

The chief extra cost in carrying out the above suggestions consists in the thorough sterilisation of the dairy utensils, but even this cost can be diminished by the installation of a home-made sterilising plant. It is a mistake to begin the cleaning process by scalding the pails and the cooler, because the albumin of the adhering milk will coagulate and render its removal more difficult. Cold water should therefore first be used to remove all traces of milk immediately after milking. The utensils may be left in cold water during the breakfast period. Then they should be washed with hot water and soda in order to remove greasy material. Countless organisms, however, still cling to the walls of the churns and pails. Only sterilisation can remove these organisms, but the two processes of washing and sterilisation should always be regarded as complementary one to the other. Steam is the most effective sterilising agent on a farm for the above purpose. The cooler is perhaps the most difficult article, excepting the milking machine, to keep clean.

An improvised sterilising plant may be used by an ordinary copper or portable boiler with a wooden lid, in the centre of which is a metal pipe 6 or 8 inches in length and 2 inches in diameter, in order to lead the steam from the boiler into the article to be sterilised. Mr. Garrad, the agricultural organiser for Kent, to whom I am indebted for much information in this paper, has estimated that the additional cost of carrying out all the above suggestions should not exceed 2*d.* per gallon—i.e., ½*d.* per quart of milk. In Reading farmers get 3*d.* per gallon extra for Grade A (tuberculin-tested) milk, and the retailer sells it at 4*d.* above the price per gallon of ordinary milk.

The Place of Raw Milk in the Diet.

At the end of this competition the Kent Milk Recording Society decided to publish a full report, to which I contributed a foreword, in the form of a handbook, 20,000 copies of which were distributed broadcast. Probably a greater section of the public are now alive to the need for a cleaner raw milk-supply than was the case several years ago, but unless care be taken misapprehension as to the best methods to be adopted may arise.

Clean raw milk is not only a perfect food, but it is by far the best form of milk if it can be obtained, and every effort should be encouraged to induce an increased consumption of such food, not only from a health but from an economic point of view. Opportunities for the contamination of milk arise at each stage of its journey from the cow to the consumer: soiled udders, the milkers' hands, the milk pail, the mixing vessels, the hands again, the carts, the shop, and so forth. It has been proved that the greater the cleanliness of the cow, the milker, the vessels, the cowshed, and the lower the temperature of the milk, the fewer are the bacteria present at the source of supply.

Any steps which might lead to a diminution in the consumption of raw untreated milk would be regrettable from every point of view. It would be equally regrettable if pasteurisation became general, as there might be a tendency for less careful measures to be adopted in order to obtain a cleaner milk-supply at its source. It is by no means certain that pasteurisation does not cause changes in milk which lessen its nutritive value, whether by destruction of vitamins or by the reduction of the lime contents which are so necessary for the building up of bone structure in young children.

I would therefore plead for, first, universal help and encouragement in the increased production of a cleaner raw milk at a reasonable cost; secondly, an increased consumption of such milk by a reassured public; and thirdly, a repetition and continuance of such competitions as I have referred to above. If such objects can be obtained, and I feel sure that they can be, a great step forward will have been taken towards the future success of the dairy industry and in an improvement of the general public health of the community.

A DESERVING CHARITY.

WE are happy to draw attention to the annual dinner of the Newsvendors' Benevolent and Provident Institution, which will be held at the Hotel Cecil, London, on Nov. 4th. The institution was established in 1839, and there are at present 79 pensioners, whose welfare is constantly borne in mind. Sick parents are sent to convalescent homes, orphan children are cared for in selected institutions, and financial help is given in cases of need.

"ALVUS ADSTRICTA."

Now that intestinal stasis is suggested as a predisposing cause of cancer, Dr. Isaac George writes from Esperance, West Australia, to remind us that he published in THE LANCET of Jan. 30th, 1904 (p. 345), a letter suggesting that the constant absorption of retained fæces must have an effect upon active cell life and produce changes leading to increased action and ultimate madness of rapid multiplication. "Every constipated individual does not get cancer; but does every person exposed to the tubercle bacillus get tubercle?" Only a certain number fall by the way.

AN IMPROVISED DRIP-FEED REGULATOR FOR CONTINUOUS SALINE ADMINISTRATION.

Dr. B. Gluck, resident medical officer at the Kent and Canterbury Hospital, writes: "Continuous rectal administration of saline has many advantages over other methods, both as regards effect and ease of giving. The apparatus can easily be improvised from a thermos flask and some glass and rubber tubing, but a visible drip-feed is essential. Both the Canny Ryall and the Laurie regulators are liable to break—generally just when required—and then may take some time to replace. The following can be made in a few minutes: A piece of glass tubing about 3 in. long is closed at one end with a small cork and a serum needle pushed through. A needle with tap, as used for subcutaneous saline, is an advantage, but otherwise the flow can be regulated to the required number of drops per minute by means of a screw clamp on the rubber tubing."

GREEN APPLES.

IT is accepted as an axiom by mothers and complacent neighbours that boys who eat large quantities of unripe fruit, especially apples, get colic. The belief is well founded, but on tradition and experience rather than on accurate knowledge of the exciting cause of the pain. The curious widespread acceptance of this sequence as inevitable, natural, and not dangerous—mothers can see a white-faced, guilty son flatten himself face downwards on the floor, or writhe on a couch with thighs strongly flexed, and remain undisturbed—has its advantages; for the family practitioner, if called upon to explain exactly why green apples give rise to colic, would consult in vain his learned books of reference. A physician of the new scientific school recently approached directly on the subject by an aggrieved victim murmured with great effect that it was a mystery. The much more frequent question from the irate parent, secretly annoyed with Providence for letting him down, as to how Freddy could have escaped consequences, can only be parried by a reference to Freddy's excellent inherited constitution; for it must be admitted that the reason why intestinal pain should so often follow on the consumption of unripe fruit is obscure. We know very little about the ripening process in fruit, and such information as we have hardly bears upon this subject. Incidentally, the very meaning of the term ripeness as commonly used is not a simple one; with regard to many fruits it is for practical purposes the stage at which we like to eat them—and that does not apply, for example, to medlars.

The main facts known about the ripening of the apple are that in the immature apple there is a quantity of starch which goes on increasing to a maximum, and then falls off to zero. On the other hand, the amount of sugar, chiefly lævulose, begins to increase as the starch diminishes, and for this reason starch is regarded as being the source of the sugar. From these facts we can get no help, since large quantities of starchy food can be taken with impunity by the young. Attempts have been made to incriminate the sourness or "acidity" of unripe apples. This certainly diminishes during the ripening process, but it is never great enough to warrant a suggestion that it could not easily be neutralised in the course of digestion. There remains a possibility that, on the analogy of the aperient action of salts of vegetable acids, such as tartrates and citrates in sufficient quantities, malic acid may have gripe-provoking properties, even when neutralised, but this does not seem very convincing. If the amount of malic acid in a given quantity of unripe apples were calculated, neutralised, and administered to a youthful volunteer, this point at least could be cleared up. In some fruits, again, there occurs a definite toxic principle, for example a glucoside, but there are no grounds for believing that unripe apples contain any such principle, and in any case it would be necessary to assume that it is spirited away or burnt up in the ripening process. Perhaps the least unconvincing explanation offered is a mechanical one—that the amount of indigestible matter per cubic centimetre is so much greater than in a ripe fruit, where the cells contain more water and pulp between their cellulose walls. During the ripening process there is, of course, an actual change in the cell-wall (the so-called middle lamella), which causes a loosening of the binding material between individual cells, and as the result of the softening characteristic of the process, the tissues form a mush much more readily than when the fruit is hard and unripe. In green apples there is almost a solid mass of indigestible matter, and however well masticated, it can scarcely fail to reach the bowel in hard, solid lumps.

We are hardly justified in suggesting to any young patient that he should consume salts of malic acid corresponding to 24 green apples, still less in commanding him to eat an equivalent number of green apples after they have been passed through a mincing machine and a sieve. The experimental method therefore cannot, as in so many clinical problems, be used to elucidate the matter. Dietetic faddists should note, however, that while a diet of unripe apples may be regarded as one almost wholly indigestible, it may be no more indiscreet than the habitual consumption of an almost wholly digestible diet, which leaves no residue behind to promote peristalsis. There must be a mean suited for each individual, which again will vary with his age and general state of health. It is for each one of us to ascertain for himself the relative proportion of digestible and indigestible food which goes to make up a satisfying, nutritious, and sufficiently laxative diet.

THE RESULTS OF TREATMENT IN SANATORIA.

To the Editor of THE LANCET.

SIR,—In your annotation (THE LANCET, August 2nd, p. 227) on the Medical Research Council's inquiry into the results of hygienic-dietetic treatment, as carried out in a well-run sanatorium, it is admitted that these results are difficult to assess. I should like pointedly to ask the question, Are we sure that sanatorium treatment is economically sound? Admitting that 80 per cent. of the best sanatorium patients are alive ten years after discharge, do we know how many of them would be dead if they had received equally skilled treatment at home? The Framingham figures suggest that there are ten active cases to each death from tuberculosis, from which it may be inferred that many cases recover undiagnosed and untreated. As a tuberculous subject myself, without prejudice against the sanatorium, I feel sure that I should not have got well so quickly if I had been separated from wife and children. It seems to me we need a carefully controlled experiment before it can be asserted how much it costs in sanatorium treatment to save a life.—I am, Sir, yours faithfully,

Sept. 11th, 1924. MEDICUS.

*** The writer of this letter seems to us to belong to the small class of those who can carry out a course of strict hygienic-dietetic treatment without close supervision. To so do with success implies not only the material means but also the knowledge of the daily routine, and the will to carry through a régime of self-denial. At least 90 per cent. of patients at public sanatoriums lack the means to carry on at home, and of the remainder few, we believe, would be likely to see the matter through. In the experience of sanatorium doctors daily encouragement is an essential part of successful treatment. Outside sanatoriums, it would be hard to find any considerable body of practitioners competent or willing to undertake the supervision.—ED. L.

PUBLIC HEALTH IN GAMBIA.

IN the official report for 1923 on Gambia, which is the smallest but the oldest possession of Great Britain in Africa, it is stated that no case of plague was reported. Cases of small-pox occurred from March to July, but owing to vaccination and immediate measures for isolation, the outbreak was not of a serious character. The general death-rate of the colony was 43 per 1000, and the birth-rate 26 per 1000. Only thrice in the last 20 years have the births been more numerous than the deaths. There were a great many deaths from tetanus. Infant mortality showed a slight improvement, there being 498 deaths as compared with 502 in 1922. During July, instead of the previous ten years' average of 7·6 inches, 27·49 inches of rain were recorded, and this was followed by 24·10 inches in August. About a quarter of the 400 acres covered by Bathurst (the chief town) is liable to annual flooding; in 1923 the proportion was greatly increased and the period prolonged. The standard of health in Bathurst was lowered, probably owing to the excessive damp. The increase of infant mortality from an average of 7 per month for the first six months of the year to 29 in July speaks for itself. There are five medical officers on the staff, one of whom resides in the Protectorate during most of the year. Out-patients treated at the Bathurst Hospital numbered 8712 and in-patients 596. There was an epidemic of influenza during October and November, but the case-mortality happily was small. A mother and child welfare committee has been started, and clinics in connexion with the same have been instituted at the hospital. Two additional African nurses have been appointed, and a new maternity ward has been erected.